

# AMERICAN VETERINARY REVIEW.

JUNE, 1910.

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## EDITORIAL.

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### EUROPEAN CHRONICLES.

PARIS, April 15, 1910.

**A LITTLE ABOUT ANAPHYLAXY.** Anaphylaxy is one of the most interesting subjects which occupies at present the attention of experimental physiopathologists and of bacteriologists; and the pamphlet published by Dr. P. F. Armand Delille, in *L'Oeuvre Medico-Chirurgical* is indeed coming out at the proper moment, presenting as it does the subject in a very concise manner.

The name of *anaphylaxy* was created by Charles Richet in 1902. It applies to the state of specific vulnerability that an organism may acquire with a second inoculation of some organic substance, which at the first injection had been indifferent or only slightly toxic.

Let us glance briefly into the history of the question. In 1902 Charles Richet, while studying the properties of actinotoxine (a poison extracted from the tentacles of actinæ), had observed that if, after injecting a dog with a given dose (not deadly) of this poison and when he had returned to perfect health, say three weeks later, a second injection smaller than the first was made, death of the animal would follow very rapidly. Instead of being strengthened, the organism then had become more sensible to the toxic substance, which was possessed of a

special anaphylactic property and consequently, concluded Richet, the acquired hypersensibility of the organism for this poison could be called *anaphylaxy*, a name now consecrated by use.

But to this discovery of Richet, others were soon added. First came the facts observed by Arthus. It is known that the injection of horse serum is not at all toxic to healthy rabbits, and that 10 c.c. of it can be injected under the skin or in the peritoneum of this animal without giving rise to any accident. But, and here comes the discovery of Arthus, if at intervals of several days, repeated injections of 5 c.c. of this serum are made, it will soon be observed that the injection began to give rise to a local swelling at the point of inoculation, which will become more serious as new injections will take place and after, say, the fifth or sixth may be followed by gangrene and necrosis. If the injections are continued, when the animal will have received six or eight and if instead of making them subcutaneously they are thrown in the general circulation by one vein of the ear, death will take place in a few minutes with the intravascular injection of only 2 c.c. Sometimes there will only be acute convulsions and the animal may live for a few weeks after. For Arthus these results are analogous to the anaphylaxy of Richet.

And then came the observations of Von Pirquet and Schick, who had noticed that while some poisons, virus and organic serum, require to produce their toxic effects, a defined period of incubation, which seems to be in proportion with the modifications of their toxic elements by the organisms, it is to be observed in relation to a second inoculation of those substances, made after a certain length of time, that the period of incubation is much shorter; and besides, that the toxic effects are sometimes much more severe.

Since these discoveries researches have been started everywhere and experimental anaphylaxy has been for many a great field to work upon so as to arrive at a practical application in pathology of the reactions observed and to a better explanation of pathological manifestations which may be found by the

anaphylactic state. The serum disease, reactions of tuberculin, alimentary intoxication by fishes, molluscs, etc., idiosyncrasies to eggs, to milk, etc., etc., are among those.

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As the results of the many experiments made and facts observed, the phenomena of anaphylaxy are beginning to be better understood and described, but yet there are many that still remain obscure and upon which we have up to this day no experimental notion. The theories advanced to explain them are still far from allowing a complete satisfaction for the mind of the inquirer. These theories are numerous and among them four principal ones prevail.

That of Richet, who admits that the organism acquires anaphylaxy when it is placed in such condition that by a small dose, not deadly, of the injected poison, it can give rise to the formation of a new product, which requires for its production a period of 12 or 18 days. This product Richet calls *toxogenine*. When a second dose of poison is introduced into the organism it meets with the toxogenine which, uniting with it, produces a new poison, *apotoxine*, of an absolutely different nature and constitution from that of the poison introduced in the first and second injection, as it kills when given in proper condition with a symptomatology entirely different from that which characterizes the action of the poison itself.

Von Pirquet and Schick have tried to explain anaphylactic manifestations with the anticorps theory of Ehrlich. For them the introduction of a foreign body, toxic or not, acting as antigene, gives rise to the formation of anticorps, whose elaboration requires a certain duration of 10 or 12 days. If after that period, which corresponds about with the disparition of the antigene, another antigene is introduced, there takes place in the organism a sudden union between the anticorps and the antigene, which is manifested by the symptomatology of anaphylactic accidents.

In his theory for Nicolle the introduction of any antigene (cell, microbe or toxine) in a foreign organism, gives rise to the formation of two kinds of anticorps, some coagulating, others decoagulating or lytic, to which he gives, according to the antigene injected, the name of cyto-coaguline and cytolysine, of bacterio-agglutinine and bacterio-lysine, of toxino-coaguline and toxino-lysines. According to the predominance of the coagulines and of the lysines, phenomena of immunity or of hypersensitivity are presented.

And finally in the theory of Besredka the injection of a small quantity of antigene gives rise to the production of a specific anticorps which he calls *sensibilisine*. This sensibilisine to develop itself requires a certain length of time; in average ten or twelve days, according to the animal. This sensibilisine fixes itself upon the nervous system, impregnates it in such a manner that after the introduction of a new dose of antigene the anaphylactic effects take place.

After all, all these theories are yet leaving the inquirer in doubt and it is for that reason that Dr. Armand Delille concludes his pamphlet in saying "Taking in consideration clinical and experimental facts, one may recognize that there exists a certain number of substances of organic origin which, introduced a first time in the organism in not nocive dose, have the property of producing in said organism, after a defined length of time, a state of anaphylaxy; that is, an excessive sensibility towards reduced doses of the same substance which gives rise to no disturbance in a new organism. This state of anaphylaxy seems to be connected with the development in the organism of special bodies or properties which exist among others in the serum of blood, as long as, by the introduction of this serum in another individual of the same specie, this individual is immediately placed in a state of anaphylaxy."

Last conclusion: In the state of science, it is difficult to formulate an absolutely satisfactory theory to explain the phenomena of anaphylaxy. Yet one is authorized to think that there results after the anaphylactizing injection, elaboration of

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an anticorps which has the property, by its action upon the injected antigen, to remove its toxicity, concealed or counterbalanced by other substances introduced in the same time as it was.

Let us wait for more light on the subject, and yet benefit by what we know of it.

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**THE VETERINARIAN'S RESPONSIBILITIES.**—When only acting as physician, the veterinarian's responsibilities are merely of a self-moral nature, as it is not likely that, except under very exceptional circumstances, suits before a court of law would have to be defended by him, because of an improper treatment or of mistake in such. It is not so, however, when his services are those pertaining to surgery, for which peculiar conditions may present themselves in which carelessness, errors or improper manipulations may have resulted in detriments of various nature towards the owner of an animal.

Of course in every country there are laws which have for their object the protection of those that may be actors on such occasions. There are laws which will protect the owner, and others which also defend the surgeon. Laws which tell what carelessness, errors or improper manipulations (or in other words, "big manifest negligence") are, and they bind the surgeon to not fall into them under stated penalties. But are these laws perfect, and can they find their application in every instance? These are questions which may not be answered favorably in all cases and for which undoubtedly the surgeon may have, or must take, special measures, by special understanding with the owner of the animal which is to be submitted to an operation.

For instance. Many years ago when casting tables were not invented, a veterinarian that some among us may remember, had to throw a horse for firing a hock. The horse broke his back. An accident resulting from the improper or rather careless manipulations of the surgeon. He had to pay a large amount.

Was he really at fault? Yes, if not entirely from lack of attention to his patient (although it was not perfect), because the owner had not been aware of the possibility of the accident and had not been acquainted with the necessity for casting the horse. I believe these were the facts. The professional results were that from that day no veterinarian threw a horse down unless the owner was notified of the risks, that he gave his consent, assuming all the chances; of course with the proviso that the surgeon would take all the necessary precautions which were then known against the possibility of an accident.

If the law in this case did protect the owner, it had also a very good effect on the surgeon; who learned how to protect himself. I do not know positively, but I feel pretty certain that even to-day the veterinarian who has not the use of a casting table will protect himself as they did in the days I refer to. It is true that the accident is very rare, but as long as it may take place and that difficulties at law may be the consequences, let him protect himself.

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This question of responsibility has also been considered some time ago in the *Deutsche Tierärztliche Wochenschrift* and recorded in the *Revue Générale* under the heading of *Is a Veterinarian Obliged to Resort to Antiseptic Treatment of Wounds?*

A German veterinarian was called to treat an animal for a wound of the foot, but the patient was so nervous that all interference was impossible and it was necessary to cast him after giving him an intravenous injection of chloral. This was made in the jugular with a syringe carrying a rubber tube attached to a glass funnel. Everything had been minutiously cleaned, but the skin was not disinfected. The operation was a success. The horse got up and was taken to his stall. In the evening, however, an enormous swelling had taken place all over the neck, asphyxia was threatening and temporary tracheotomy had to be performed at once. Yet the horse died after three days.

Then the owner started a suit for damages against the practitioner, claiming that the horse had died from blood poisoning because the skin had not been disinfected before the operation and before the injection of chloral. Fortunately the post mortem had not been made and the cause of death could not be established and still less the proof of the professional fault of the veterinarian. Consulted in relation to the above on the question, "Is a Veterinarian Obliged to Resort to the Antiseptic Treatment of Wounds?" Professor Frick, of Hanover, took the practical point of view of the question and stated that often "we are building illusions on the cause of the recovery of a patient and that we attribute its merits to the antiseptic measures that we have used, and again that it happens that with the most minutious attentions, we are unable to avoid a complication. It is proper to leave the practitioner judge what he ought to do and to bear in mind that in case of law suits, it is always an obligation to prove that 'gross manifest negligence' has been committed which will be many times impossible to do."

However, this case reminds us of one which occurred in our own hands. Called at night to a case of colic, we made subcutaneous injection of morphine. Forty-eight hours after the horse had an acute attack of tetanus which carried him off in short time. Fortunately antiseptic precautions were not known in those days or perhaps we would have had a case similar to that of the German veterinarian.

Antitetanic serum was not known either.

If it had been evidently we would not have resorted to it for a prick from a Pravaz's syringe. And yet, now that the use of this serum is so common, can there not be occasion where the responsibility of the practitioner may be engaged, should its use have been omitted?

The question has almost been positively put and discussed at one of the seatings of the *Societe Centrale* of Paris. It was brought about as a sequel to a report made by one of the members upon a paper relating to the question I have alluded to some time ago, namely, the necessity of one or more injections of

antitetanic serum in some stated operations; principally that of castration. In the report that subject was treated and to strengthen the point the opinion of a magistrate of renown had been asked for, given and mentioned, in which the conclusions were that the responsibility rested with the careless surgeon for not using it, and therefore for the right of the owner to sue for damages in case of accident, conclusions that could not be entertained.

The use of antitetanic serum is not obligatory and must be left to the judgment of the surgeon. Leaving the question aside of whether or not the fact of its use might not be considered as a scientific progress and therefore obligatory in some light, the probable and sure way to avoid trouble is to resort to the measure indicated in the case mentioned at the beginning of this article, namely, suggest its use to the owner and if declined let him assume all the risks. This would seem the safer and business-like manner. Anyhow it would relieve the veterinarian of all responsibility.

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**SIGN OF STRAUSS AND VAGINALITIS IN EXPERIMENTAL DIAGNOSIS.**—The conclusions to be drawn from the indications obtained by the inoculations of glanders virus in the peritoneum of Guinea pigs are well known and the method is of daily practice for the diagnosis of glanders. The orchitis that develops has been first and for a long time considered as essentially pathognomonic of the existence of glanders until other experiments had come to show that this orchitis was not only a manifestation of glanders, but that other microbes would give rise to the same pathological manifestation.

Indeed, many experimenters have inoculated in the peritoneum of male Guinea pigs the virus of tuberculosis and with them the existence of the vaginalitis followed the inoculation.

Prof. Panisset experimenting in the same direction injected in the peritoneum of Guinea pigs human tuberculous bacillus and also found at post mortem of the animals that died with

tuberculosis that there were miliary tuberculous deposits on the testicular muscles, on the testicles and on the epididymis. And from these results the question presented itself to his mind: Has the bacillus of Koch a specific affinity for the vaginal sheath of the male Guinea pig?

He inoculated Guinea pigs in the peritoneum with very weak doses of virulent human bacillus and found vagino-scrotal lesions perfectly typical. With one 1,000th of milligramm of fresh bacillus, a Guinea pig died in 75 days and presented at post mortem besides the pulmonary lesions, grey and yellow miliary tubercles on the testicular muscles, the testicles and epididymis with also some in the adipose tissue. With one 10,000th and even one 100,000th of a milligram Panisset realized the same lesions. In following, during life, the development of these lesions, one can quite easily perceive the fine granulations developing on the testicles and testicular muscles. And the atrophy of the testicular structure is readily noticed. It becomes harder. One or the other of the testicles, or sometimes both, become firmly attached by adherences which take place between the layers of the serous membrane and a time soon occurs when the organs can no longer be moved up and down nor pressed back into the abdomen. In using pus taken from bovine tuberculosis or from lesions obtained on Guinea pigs, similar conditions were also observed during life or at post mortem. But in three cases out of eight there was besides, a true orchitis.

This localization of the manifestations upon the testicular serous membrane has some importance to the point of view of the diagnosis of glanders. Pulmonary tuberculosis in horses assumes atypical forms, glanders and tuberculosis may both exist in one animal and in those cases, indications given by a male Guinea pig might give rise to errors if the experimenter had only noticed the presence of the testicular swelling.

Panisset recalls a case where orchitis had been noticed as the result of inoculation made in the peritoneum of three Guinea pigs, with pulmonary lesions obtained from a horse which had given a doubtful reaction to mallein. When Nocard was con-

sulted, he pronounced the case to be one of tuberculosis and not one of glanders. Such error may occur again and in the presence of the reaction of Strauss, it can be avoided only by the bacteriological examination of the lesions.

These interesting experiments of Panisset have lately been confirmed by those of Prof. Basset who relates them at the *Societe Centrale* of Paris. He inoculated pleuritic exudate of tuberculous animals in the peritoneum of male Guinea pigs. One month after he found the testicles completely immobilized, and when the animals died with generalized tuberculosis he observed that the vaginal cavity had disappeared and that their layers were firmly united by a sheath of fibrous tissue. Basset also concludes that many are the microbes which, when injected in the same manner, will show an elective capacity more or less marked, for the vaginal serous membrane, that the bacillus of Koch is one of those, and that the sign of Strauss must be accepted with certain circumscription. In such experimental diagnosis symptoms and lesions must, of course, be taken into consideration; but to those, bacteriological examination, if it does not impose itself, it at least ought to be added.

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HOW MUCH BLOOD CAN BE TAKEN FROM A HORSE?—It has been related some time ago by the distinguished veterinarian, Mr. Prevot, who has charge at the French Pasteur Institute of the Department for the preparation of serums. The very curious observations that he presented, give an idea of what answer the heading of this note demands. The figures are certainly surprising and at least unexpected. Here, for instance, there is a horse which, since March, 1897, has furnished 2,038 litres of blood. Eleven years old when he entered the service he is now 23 years old, he has given *four* times his weight in blood and appears not the least disturbed by the removal of such quantity of his circulating fluid. Another horse, that died at the age of 28 years, has given, during his stay at the Institute, 2,600 litres of blood.

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As he weighed only 425 kilograms, he has furnished *six* times his own weight of blood.

These repeated bleedings, says Mr. Drouin in his report upon the statements of Mr. Prevot, do not interfere at all with the increase in the weight of the animal. One horse which weighed 480 kilogramms in 1902 when 9 years old and which actually weighs 536 kilogramms although he has already furnished 836 litres of blood. Another, aged 8 years, when he entered the Institute in 1902 weighed 435 kilogramms, since he has had 782 litres of blood taken from him and yet he has gained 81 kilogramms in flesh, weighing 516 kilogramms.

Sometimes the quantities of blood extracted went beyond the adopted limits, for one reason or another, and one case is mentioned when an average of one litre per day was taken from one horse, 246 litres being drawn from him between February 10 and November 26. But all the horses of the Institute are submitted to large periodical bleedings and the number is no longer counted of those which have given 1,000 litres of blood. What wonderful power, continues Mr. Drouin, must a healthy organism possess to repair such losses of blood! What can remain after all those venesectiōns of the primitive mass of blood? The animal must have an entirely new supply of blood.

In his article, Prevot mentions that most of the horses used for the preparation of serum die late; specially if they can resist the first venesectiōns. At any rate, it results from all these observations, that bleeding is comparatively harmless, and that if we wish to lower the blood pressure to avoid internal hemorrhage or to remove from the organism products of microbian intoxication the veterinarians do not need to hesitate in resorting to it. If it has not been absolutely necessary, nothing serious will result from it as the new blood will soon have taken the place of the one removed.

Many of the facts related above may have already been observed, but with all that their publication cannot fail but be interesting.



ADRENALINE—ITS USES AND INDICATIONS.—Prof. K. Winslow in the last edition of his excellent work on Veterinary Materia Medica and Therapeutics has presented to his readers in the chapter on Medicinal Agents of animal origin, a very good history of Adrenaline. In the revised edition of his work Prof. Kaufmann relates amongst the physiological effects one of interest which I have not seen mentioned in Winslow. I hope he will permit me to refer to it.

Kaufmann says: "Besides vasoconstriction and anesthetic effects the subcutaneous injection of a solution at I p 1,000 will in the horse, give rise to a very peculiar symptom: viz., the apparition of a local sudation which remains exclusively along the lymphatic blood vessels, rendering their course most evident and leaving the intervals between the lymphatics dry. This sudation appears about one hour after the injection and lasts several hours. The next day and several after, the marks of this sudation remain indicated on the hairs which have an aspect different from those of surrounding parts and which cannot be removed at once by brushing or with the use of the curry comb."

In relation to the administration of adrenaline, Prof. Josué in the *Presse Medicale* remarks: The way to introduce this drug is essential to bear in mind. It must not be injected in veins, the lungs or the trachea; as experimentally, it has been followed with acute pulmonary oedema and death with even relatively small doses. Exception may be made, however, for cases of imminent death from operative shock or cardiac asthenia. Injected in the subcutaneous tissue it is less toxic and then does not produce the arterial lesions of atheroma as when used with animals of experiments when it is given in the veins. Accidents of intoxication are still less frequent when the drug is given per oris. According to Josué, adrenaline can be given for a long time, two years in one recorded case.

At any rate, it is pretty certain that so far adrenaline applications need yet confirmation and that they remain under the dependency of three special and essential pharmaco-dynamic properties. One degree an hypertensive vaso-constrictive action, 2

degrees an assisting action to the surrenal secretion, 3 degrees a strengthening action towards that of the alkaloids.

The posology of adrenaline is also still the subject of controversy, and speaking of it, Dr. Martinet says that to it an old saying can be well applied: **NOT TOO MUCH, NOT TOO LITTLE, NOT TOO OFTEN AND NOT TOO LONG.**

Not too much as its peculiarly active substance may, in high doses promote alarming symptoms, even if they soon pass off.

Not too little, as its effects are then absent.

Not too long nor too often as it is eliminated very slow and its administration may bring about accidents of intolerance due to accumulation.

Probably in veterinary medicine, the benefits gained by the use of adrenaline will remain principally with external use as demonstrated by the experiments of Prof. Dupuy and Van den Eckhout, of Bruxelles.

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**BIBLIOGRAPHIC NOTICES.**—Among the communications that I have received lately either as exchanges, complimentary or others, I find some which are deserving considerable attention. For instance, the January number of the *Agricultural Journal of the Cape of Good Hope* contains some remarks from R. W. Dixon, M.R.C.V.S., on *East Coast Fever* or *Rhodesian Red-water, Tropical Piroplasmosis*; and from Director W. Robertson, M.R.C.V.S., *Notes on Some Diseases of Ostriches*.

These articles are for general information, it is true, addressed to farmers, stock and ostrich raisers, but they are nevertheless very instructive, and while one would like to find in them perhaps a little more strictly scientific and complete information, these are yet of valuable importance and just for the object they have in view.

The part of the article of Director Robertson referring to paralysis of the limbs of ostriches is very interesting. "The disease is sudden in onset. \* \* \* Birds are suddenly affected, principally young birds. \* \* \* Some are suddenly

affected quite yellow with fat, and in the pick of condition. \* \* \* There seems to be a complete absence of pain. \* \* \* At first the animal makes strenuous and constant efforts to rise, but in a few days gives up the attempt. \* \* \* They may live for months without improving. \* \* \* The illustrations that are reproduced are very suggestive of the symptoms and condition presented by the birds. In the article referred to a few cases are described and also the post mortem.



FIG. 1.—Showing Ostrich affected with paralysis attempting to rise.

Inquiries into the pathogeny of the disease have brought out the facts that there has always been found in the inflamed membrane of the bowels, a short bacillus, fairly regular in shape, stained by the ordinary aniline dyes and not by the Gram. Ex-

periments of inoculation of bouillons of cultures of this bacillus; "most certainly the casual agent of the disease" have resulted in giving rise to symptoms similar to those of the original affection. According to Director Robertson, the symptoms ob-



FIG. 2.—Ostrich Chick affected with paralysis attempting to crawl about on its hocks. Note the contracted condition of the toes.

served in paralysis of ostriches point more to a toxine poisoning than to anything else. The poison elaborated being in the intestines and by its action on the spinal cord, would give rise to the nervous paralytic manifestations. The only source of infection, however, is not only due to contaminated food and water. But he strongly recommends to have all diseased animals immediately killed and buried deeply and all the others to be taken to other fields and be hand fed with cut green crops.

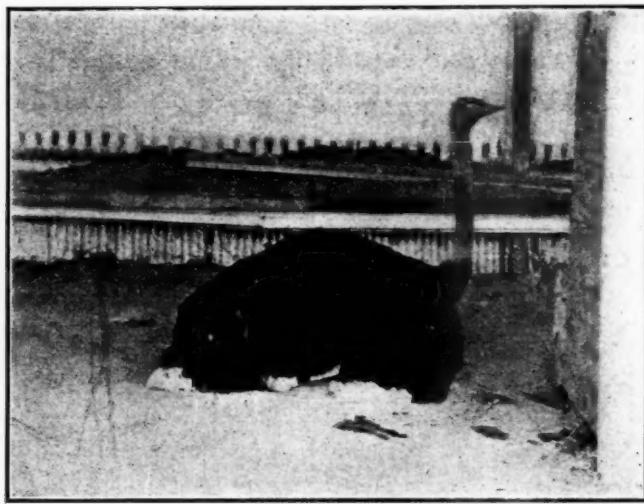


FIG. 3.—Bird in last stage; note the closed eye.  
(This was a sitting bird.)

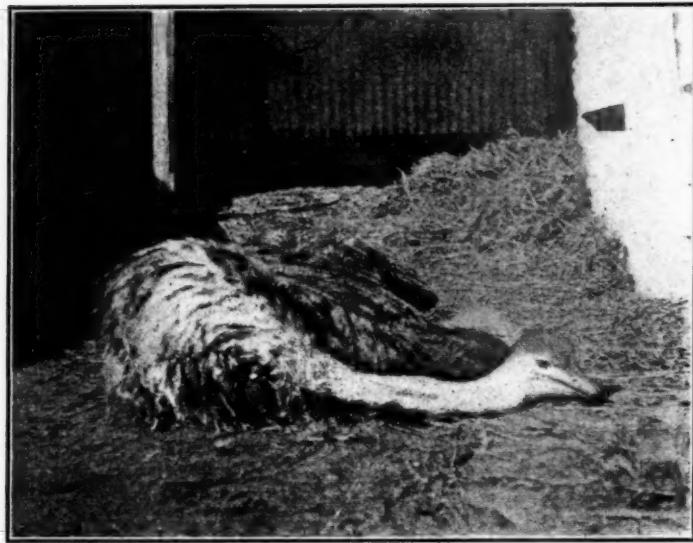


FIG. 4.—Showing position assumed by sick bird in last stages.

The illustrations taken from the *Agricultural Journal* may prove interesting.

In the same number Prof. J. D. F. Gilchrist continues his valuable contribution to popular information on *Agricultural Zoology*, and Dr. Walter Jowett, F.R.C.V.S., D.V.H., gives the history and description of an intestinal parasite of ostriches, a *sclerostoma*, a number of which had been found in the coeca and terminal portion of the small intestines of a bird.

A. L.

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### THE TRIP TO THE COAST.

The great trip to the Pacific is gradually taking form through the combined efforts of the secretary of the A. V. M. A., the local committee of arrangements, and members throughout the country, who are expressing their interest in the success of this great undertaking by kindly and timely suggestions. Success is assured because of the fact that harmony prevails; and even now, in the month of June, the project has taken a tangible form, so that A. V. M. A. members can picture the route to themselves, the time it will require, and the amount of expenditure necessary. In our May issue, through the chairman of the entertainment committee, we were able to publish the headquarters and hotel arrangement, including rates; through the secretary of the A. V. M. A. we were able to furnish our readers with an outline of the trip and the cost from Chicago to the coast. Since then, the veterinarians of Chicago have convened for the sole purpose of signifying their intention to attend the San Francisco meeting (and Chicago does not do things by halves), and to discuss the plan of leaving their city by special cars or by a special train, and considered the advisability of having *two* such cars or trains; one leaving a week earlier than the other for the benefit of those who may desire to spend an extra week in sightseeing en route, as explained by Dr. Merillat on page 381 of this issue. Dr. Cooley, evidently with a similar thought in mind,

offers some suggestions for the consideration of his brother members on page 382. Dr. A. D. Knowles held out the charm of the Yellowstone National Park as of especial value and interest as a side-trip in the May REVIEW. Those favoring that or some other side trip would be able to accomplish it by taking the earlier train proposed by Dr. Merillat. Again, away up in the Northwest, at Spokane, Dr. Nelson, chairman of the transportation committee, has been working up some plans that, we believe, will appeal to the majority. These plans will give the conventionists an opportunity for a break in the journey filled with interest, that will not necessitate the earlier train to accomplish it, but can be nicely achieved by leaving Chicago on August 31. This arrangement plans to make the members of the party going by that train (called the "AMERICAN VETERINARY SPECIAL") guests of the Veterinary Pacific Northwest, during their trip through the Northwest, guests of the Chamber of Commerce of Spokane from noon till 8 p. m. on September 2, and guests of the Seattle Chamber of Commerce for ten hours on September 3; finally arriving at San Francisco at 10 a. m. on the morning of the 5th. Spokane and Seattle are sufficiently far west, and otherwise interesting, to make them appeal to those going not only from the Eastern, but also from the Middle Western States; and for that reason promises to make the "AMERICAN VETERINARY SPECIAL" popular.

The REVIEW has encouraged free expression from A. V. M. A. members through its columns, believing it to be an aid to those upon whom the colossal task has fallen of perfecting the arrangements of transferring them across the continent in the pleasantest and most profitable manner, and feel sure that Secretary Lyman and the local committee of arrangements have been grateful for the suggestions and interest manifested by the members, and are still open for more of them. Perhaps, in addition to those who desire to go and return in as short a time as possible, and those that may desire to start a week earlier and go through the Yellowstone, etc., there may be still others who would like to spend some extra time in sightseeing returning.

Such being the case, it might be possible to arrange with the railroads for "stop-over privileges" returning. Any further suggestions should be made *at once* for publication in our July number, as *final* arrangements will be published in the August REVIEW.

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**PROFESSOR BUTLER'S TALK WITH THE YOUNG GRADUATE.**—When our May number of *The American Journal of Clinical Medicine* reached our desk, we were attracted by the picture of the infantile *medicus* that adorns its front cover page; and on closer inspection noted the designation, "New Graduates' Number," and were curious to see the contents, but were not to be satisfied at the time owing to duties that prevented our so much as opening the book then. More than a week later our still unsatisfied curiosity prompted us to put the book in our pocket when starting on a professional call. We do not ask commendation for our powers of resistance, for we were not aware until then of the splendid article the number contained from the pen of Professor George F. Butler, of the Chicago College of Medicine and Surgery, entitled, "A Talk With the Young Graduate." The advice, encouragement and common sense offered to the young men of the profession in that article are an inspiration to anyone whose good fortune it is to read it, and we wish every young graduate in *veterinary* medicine as well, and old practitioners, too, could enjoy the privilege that we have enjoyed in perusing those pages. "The Young Doctor" is also treated editorially in the same number, in addition to an article entitled "The New Doctor's Opportunity," by Dr. Abbott. In fact the May number is an especially "meaty" one all through. The June issue will be a special tuberculosis number.

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**CONDITION COUNTS.**—While the *Journal of the United States Cavalry Association* is always interesting, the May number is especially so, and contains many articles of interest to

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veterinarians; notably among them, one entitled "Condition Counts," by Veterinarian R. Vans Agnew, Fifth Cavalry. The article shows that the doctor is very much interested in the problem of properly caring for and feeding cavalry horses, and is well versed on the subject, not alone of the care of horses, but of the several food-stuffs used as forage.

It is interesting and instructive; and suggests a considerable amount of study and thought by the author, who urges the broadening of the veterinarian's field in the army, as is the tendency elsewhere, making him rather a preserver of health than a mere prescriber for ailments, and justly maintains that he should be an inspector of all food-stuffs consumed by the army horses, as well as of the meat consumed by the men.

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MR. R. M. LOGAN, District Attorney of Delta County, Colorado, on May 5, tried the first case under the new law regulating veterinary practice in that state. The defendant, a non-graduate, who had not made any effort to comply with the law as a "non-graduate practitioner," was ordered either to stop practising or take the next examination in June. Failing to pass said examination, he must cease practising in the state.

TUBERCULOSIS FROM COWS.—Prof. Von Behring is vindicated, Prof. Koch is brought to confusion, by the report of an investigation conducted by the officers of the Research Laboratory in the Department of Health of this city. Prof. Koch, who discovered the tubercle bacillus, has maintained that human beings are never infected from the milk or butter of cows afflicted with tuberculosis. Von Behring, on the other hand, has strenuously maintained that this is one of the chief causes of infection of human infants. It is not the chief cause, but, as Dr. William H. Park reported to the Congress of Physicians at Washington last week, bacilli of the bovine type were found in nine out of fifty-four cases in children over 5 and under 16 years of age, one of which was fatal. In children under 5 years, of eighty-four cases, twenty-two were of the bovine type, and nine of these were fatal cases. Dr. Park estimates that about 10 per cent. of all children dying of tuberculosis in infancy die from milk infection. \* \* \*—(*New York Times.*)

## ORIGINAL ARTICLES.

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### FUNDAMENTALS OF GOOD STATE WORK WITH INFECTIOUS DISEASES OF DOMESTIC ANIMALS.\*

BY M. H. REYNOLDS, UNIVERSITY OF MINNESOTA AND STATE LIVE STOCK SANITARY BOARD.

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I can conceive of but two reasons for the existence of any live stock sanitary board or the office of state veterinarian. Clearly we have the protection of human health against transmissible diseases of live stock and the protection of our live stock from disease and loss that may be prevented by intelligent sanitation. What else—what other justification for such board or office. But granting that either or both subjects are or may be attained, then we have an important work.

I know that this work is important. Stock owners know in a general way that this work is important. No one will deny that live stock sanitary control work is important, but sometimes it is worth while to ponder over things which we already know.

It is impossible to put into reliable figures an estimate of the value to this country of federal work which but a few years ago eradicated foot and mouth disease after it had become rather widely spread in our New England states or the work which more recently eradicated foot and mouth disease from four states.

Who can estimate and place in figures the dollars and cents value for the present and indefinite future of the work which eradicated some years ago pleuro-pneumonia from the cattle herds

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\*Address before the Michigan Live Stock Breeders' Association, January 13, 1909.

of the United States. Important discoveries in connection with the cause of Texas Fever and the splendid work with this disease now under way in our southern states illustrate well the possibilities of usefulness that lie in sanitary control work.

You have no reliable figures upon which to base an estimate upon the annual losses from hog cholera in the United States, but such figures if they could be given would prove startling. We have lost within a single year in Minnesota from hog cholera—one disease of one kind of stock—not far from \$1,250,000. Suppose, just suppose that it cost twenty or thirty or forty millions to eradicate hog cholera from the United States, the amount would be trivial in comparison with the savings through a long term of years.

Losses from carcasses condemned on account of tuberculosis at our great packing houses and from carcasses of hogs that are being condemned at these places, have within a few years become a matter of such importance that packers are seriously considering the question as to what can be done about it. Very recently an International Commission consisting of twelve members representing breeders, packers, veterinarians engaged in state and provincial work with bacteriologists and experts engaged in federal and dominion service had its first meeting at Buffalo, N. Y. This commission has for its duty careful study of the great problem of controlling tuberculosis among domestic animals. This commission may be compelled to continue in service for several years in order to accomplish actual results, so difficult and so important is this one live stock sanitary problem considered.

We are to consider not only the matter of dollars and cents for owners. This question has a more important phase than in the relation of infectious diseases of domestic animals to disease of the human being. Many of our best authorities now agree that the infection of human tuberculosis is frequently received through the digestive tract and that an important percentage of these cases comes by infection of the child, or even older persons, through contaminated bovine milk. Plainly this work is worthy of our earnest consideration.

## STATE WORK.

*History.*—Safe development of a state live stock sanitary board work is well illustrated by Minnesota's experience. Our progress as a working machine has been a process of evolution. In 1897 the writer was made a member of the State Board of Health, previously composed entirely of practitioners of human medicine. Soon after this innovation, we arranged for a committee on diseases of domestic animals. This later developed into a veterinary department of that board; funds for this work were increased and our live stock sanitary control work began to assume creditable proportions. Early in 1903 the veterinary control work was removed by legislation from the State Board of Health and given in charge of the present live stock sanitary board.

In order that I shall not be misunderstood, may I not explain that I am not now and have not been for several years in executive charge of the work, although a member of the board. Our Dr. Ward is executive officer. Please do not get the impression therefore that I am boasting of my own work.

I purpose to use Minnesota's organization as a text, or rather as an illustration to bring out principles and methods.

When this Minnesota work began in January, 1897, with the appointment of a veterinarian to membership on the State Board of Health, there was available for control work with infectious diseases of animals the sum of \$3,000 for the biennium. This has been gradually raised through twelve years to \$172,000.

Some of my hearers probably wonder what our board is doing with this sum of money and where the graft comes in. I can assure you that there is no graft about it, and no favorable opportunity for successful graft by those who control the fund; I will explain later in detail as to what we are doing with this money, and why there is no favorable opportunity for graft.

## ORGANIZATION.

Concerning the organization, I may say that our board consists of five members appointed by the governor, a possible weak

spot. It is specified that three of these must be financially interested in the maintenance of live stock in our state, and that two members shall be competent and qualified veterinarians, graduates of recognized veterinary colleges. But one membership becomes vacant each year, so that there is no opportunity under ordinary conditions for sudden changes in membership and reversals of policies.

Board members do no field work and receive no compensation except traveling expenses to board meetings. I consider this one of the strong features of the Minnesota plan, and would not under any consideration approve a change which would provide the possibility of financial gain for board members.

The board meets quarterly for consideration of the work accomplished during the preceding quarter, to plan work for the future and to consider proposed regulations, amendments, etc.

From outside its membership the board selects a secretary, who is the executive officer to carry out work planned by the board or provided by law. He must be a graduate veterinarian and from a reputable veterinary college. This gives a single trained executive officer in authority for carrying out plans of the board and provisions of the law, but he does not originate important policies or issue formal regulations except as authorized by the board. The board also employs several field veterinarians on full time, a veterinary bacteriologist, and such other help as may be deemed expedient. These are not appointed by the board subject to approval of a governor; nor selected by any political boss, with a board compelled to accept.

The duty of the board is clearly and generously specified as follows:

\* \* \* "The board shall protect the health of domestic animals of the state, and carry out the provisions of this chapter; employing such means and making such rules as it may deem expedient to that end."

The only source of failure which the writer can see for a board organized in this way would lie in sheer incompetence of board members.

And herein lies a principle that must be seen clearly and borne in mind, that no difference how perfect a machine may be in plan and proportion, it will fail if wrong material be used in its construction. Cast iron would make a very poor ax, even though the blade be of perfect shape and well fitted to the handle.

I offer two propositions here for your consideration: First, this work must be on stable footing for the future. It must not be built on present conditions that may be temporary. Our good sanitary organization must be as free as possible from political entanglement and be little affected by political changes; second, there is necessarily an intimate relation with more or less overlapping between agricultural college and experiment station work and sanitary control work.

If these two propositions be true, then some at least, possibly a majority of the board members should be there *ex-officio* to give stability and freedom from political entanglement. And the agricultural college and experiment station should be represented on the membership to secure harmony and unity of service in a common field, and to add in stability. But I do not believe it best or desirable for an agricultural college to do the direct executive work and have direct executive responsibility for this sanitary work except when political or other conditions make such arrangement imperative.

Future sanitary boards are going to need all the foundation and backing that can possibly be secured when they tackle the great problems of tuberculosis and hog cholera and glanders in earnest. So far, most state boards and state veterinarians have been only playing hide and seek with these problems of tremendous practical importance. To get this "all possible foundation and backing and stability," this breeders' association and perhaps your state dairy association or similar organization should each be represented *ex-officio* on the board membership by its most permanent officers and *ex-officio* members having taken seat should serve for at least a specified term. I regard this lack of stable *ex-officio* membership as a serious flaw in our Minnesota organization.

The Minnesota state board as thus far described, however, constitutes only a small central machine, for with this there are intimately associated under carefully worded provision of law about 2,500 local boards of health and health officers. It is expressly made the duty of local boards of health and health officers to co-operate with the live stock sanitary board. It will be seen that we thus have agents in every township, village, town and city of the state for whom the law specifies certain duties and who can be called upon by the state at any time for active assistance.

#### FEATURES OF THE LAW.

The state board, also the local board, with certain restrictions and within their respective jurisdictions, may quarantine or kill any domestic animal infected with or having been exposed to any infectious disease.

The law is explicit and severe concerning importation of stock contrary to law or rules of the board, and provides a penalty of \$500 to \$1,000 for each offense on the part of railroads.

It is the legal duty of *any person* who knows of or has reason to suspect the existence of any infectious disease in any domestic animal to notify the local board of health, and the latter within twenty-four hours must notify in writing the state board. Failure of either renders him liable to severe punishment.

In case of animals to be killed, the owner is given all reasonable protection in the way of protest, appraisal, etc., but protest does not delay the killing.

Tuberculous cattle or glandered horses are paid for when ordered killed, and when the killing has been done according to law, which is very explicit.

Appraisal limits for both horses and cattle are fixed. For cattle there is a certain limit provided for grade or what we would ordinarily call scrub stock, and another limit for pure bred and registered cattle.

Intimately associated with these features of Minnesota's laws are regulations authorized by that law.

Finally, legal penalties are sufficiently severe to prove fairly efficient.

#### METHODS.

I will have to omit most of the discussion which I had thought of giving in connection with methods and will only call attention to the fact that years of experience have brought us more and more firmly into the opinion that it is good control work to do a large part of the work directly out from a central office. To do this we use field veterinarians in direct employ of the state and on full time, rather than private practitioners as local assistants as in some states.

Good reasons for this view and policy may be easily given. Much of this work brings the doer into unpleasant relation with the owner. A man in employ of the state has no private practice to jeopardize and no friends to lose by going straight ahead and doing his duty. A man in the employ of the state who is constantly doing this kind of work and has perhaps had years of experience, can do it with less friction and even gain friends for our work where a less experienced practitioner would have trouble, make enemies for the board, and lose in his private practice. Men who are constantly at this kind of work become more familiar with a wider variety of infectious diseases than private practitioners who act occasionally as deputies on special call. Good men who are employed by the state on full time can make very much more thorough and competent investigation of an apparently new disease and make a very much more intelligent report concerning it than equally good men whose experience has been in the line of colics and spavins.

Our policy with *glanders* must be given rather briefly. The original information comes from a local veterinarian, health officer, owner, or neighbor. If investigation shows the presence of what we call clinical *glanders*, i. e., plain cases which may be recognized by careful examination, these are killed and exposed horses are tested. Horses which respond to mallein test and show any clinical symptoms are destroyed after appraisal. The

owner receives three-quarters of the appraisal, which is limited, and is paid by the state. Other horses which react to mallein, but do not show clinical symptoms are kept under a form of mild quarantine and subsequently retested.

We have had this plan on trial for a number of years. In fact Minnesota was the first public authority so far as the writer is able to learn to adopt the policy of testing all exposed horses with mallein. It has become a common policy. After years of experience we are unanimous and positive in the opinion that this is a wise procedure, and absolutely essential to any effective method of dealing with glanders. The question as to whether it is wise to quarantine horses which react, but show no clinical symptoms, may be debatable. The only satisfactory alternative appears to be that of killing all reactors with compensation for the owners. This would require large appropriations, and there are other rational arguments against the plan.

Our policy with *tuberculosis* is somewhat similar. When a herd of cattle has been tested and reactors are found, these are usually appraised at the owner's place and then shipped to some point where they may be slaughtered under government inspection. A considerable percentage of the carcasses are passed for food which results in a large saving for the state, inasmuch as the state pays the owner three-quarters of the difference between the appraisal and amount realized for the carcass.

Our work with *hog cholera* is along the lines of quarantine coupled with public education concerning the infectiousness, dissemination of the disease, and an endeavor to secure co-operation from owners, neighbors, and local health officers in matters of reporting, quarantine and intelligent use of hog cholera vaccine. It is little to the credit of veterinary sanitation in most states that hog cholera is ignored. Veterinary sanitarians have been operating too long on the weak idea that "we can do nothing with it; it's too big for us, and what is the use of trying."

May we close this discussion of organization and method by saying that a live stock sanitary board (or a state veterinarian) should not act like a spineless thing—a jelly fish, nor be a thorn

bush nor a mad dog running amuck. It should be considerate, firm, vigorous, and full of common sense in its method, with records always in good shape for defense.

#### FINANCES.

During the recent biennial period our board had the serious responsibility of administering a fund of \$172,000.

To present the economy with which this fund was handled and the general proportions of various expenses, I call your attention to the fact that during the fiscal year, August 1, 1906, to July 31, 1907, we expended a total of \$79,121.06. This particular year is taken because I happen to have the figures at hand. Any recent year would show about the same proportion.

Of this there was paid to owners of stock.....	\$63,409.29
Salaries of entire working force including executive officer, assistant secretary, field veterinarians, veterinary bacteriologists, etc.....	10,577.56
Traveling expenses of employes engaged in field work	3,894.90
Office expense and miscellaneous laboratory expense	701.76
Total paid the five board members for the year (Here is our answer to any suspicion of graft).....	138.65
Services of veterinarians not regularly employed....	398.90
	<hr/>
	\$79,121.06

During the current biennial period our fund will be used in similar proportion.

It is a matter of unanimous agreement among poultry men that a very good way to develop the ability to manage a large poultry plant successfully is to begin with a few old hens and develop experience and ability as the flock grows. Abundant experiences shows that this holds true with sanitary control work. I would call your attention to this connection that the present comfortable condition of our board finances of \$85,000 a year is not a matter of mushroom growth, but rather of slow development. Our funds have passed through an evolution from \$3,000 for

the biennium up to \$172,000 through a period of ten years' careful work. The increase has been gradual, which I think a decidedly safer procedure than large appropriations to inexperienced management. As the work grows there comes with it a very necessary experience in the way of administrative ability.

#### RESULTS.

I can easily imagine that my hearers are asking, Does the state of Minnesota get value received for the money? Well the live stock values we are trying to protect with these funds amount approximately to \$95,000,000. Let me call your attention to the fact that only a small portion of the result of any sanitary board of health officer's labors can be put into figures. There can be no possible way of measuring or definitely stating the harm or loss that might have resulted, had not outbreaks been checked or threatening conditions promptly removed. The most important result accomplished are certainly the outbreaks of disease checked, financial losses averted, and human lives saved.

I will illustrate by a single point. We have had two demonstrated outbreaks of anthrax in Minnesota during recent years. In neither case was there spread of anthrax from the farms whereon the outbreaks appeared. In order to appreciate the significance of this it is necessary to understand the very serious problem which frequent and widespread outbreaks of anthrax develop in other states.

Our veterinarians for field work are as busy as men can be on inspection service or out visiting reported outbreaks of recognized diseases, or investigating reports concerning supposedly new diseases.

To present the matter of results in another way I would call your attention to the fact that there were tested for tuberculosis under the supervision of our board during the fiscal year 1907-1908, 27,216 cattle, of which there reacted 2,490 and were killed 2,368, found diseased 2,316.

Our figures for work with *glanders* show as follows: Number of horses tested with mallein during the year 1905-1906 were

3,322; killed, 606. In 1906-1907 there were tested 1,482 horses and 516 glandered horses were killed. In 1908-1909 there were found and killed but 363. Note the significant decline. During the four years 1905 to 1909, our men found and disposed of practically 2,000 glandered horses, and Minnesota horses were probably not a whit worse infected in 1905 than those of Michigan, Wisconsin, or any neighboring state.

During the fiscal year of 1906-1907 we paid to owners of horses and cattle the sum of \$63,409.

Continuing a study of results for the state's live stock interests, under this organization I find that the last government report, Bureau of Animal Industry (1905), in which distribution of states is given, shows that Minnesota was the largest user of government tuberculin, using approximately one-fourth of the total output in a list of thirty-three states for which report is made. This same report shows that we were using one-third of the total output of mallein for four times as much as any other state in a list of twenty states reported.

It is not that we have more of these diseases than other states, but rather less, and that Minnesota, through a good organization, has been making an active campaign against these diseases.

Practical farmers and stockmen should be interested first of all in results when considering this kind of work. Possibly I can help to make plainer still the fact that Minnesota is getting good returns on money invested in her live stock sanitary control work, and that she has economical and efficient service under this plan of organization. Experienced sanitarians well know that glanders is especially apt to be prevalent in large cities and in lumber camps. Taking St. Paul and Minneapolis, Secretary Ward's record for 1901 shows 40 horses killed for glanders in St. Paul, and 85 in Minneapolis; for 1904, 59 horses killed in St. Paul and 110 in Minneapolis (a marked increase due in part to thorough work and in part to unusual importation of diseased horses into the cities) and in 1906 a still further increase—71 in Minneapolis and 117 in St. Paul. In 1907 we succeeded in having the public watering fountains closed and our record for that year

shows a drop from 71 to 34 for Minneapolis in one year, and from 117 to 48 for St. Paul. In 1909 there were found but five glandered horses in St. Paul and six in Minneapolis.

Making a study of our records of glanders in lumber camps where the disease was formerly very prevalent, we find the number of glandered horses destroyed in these camps reduced in two years by 75 per cent. This was done by careful inspection of camps in the season when work was starting, followed by periodical inspection during the winter.

As showing the progress of public sentiment in regard to tubercular cattle and safe municipal milk supply, it may be interesting to note that Minnesota now has thirteen or more cities with ordinances requiring tuberculin test as a condition upon which license to sell milk in the city may be granted.

#### SUGGESTIONS.

There are numerous and large portions of the veterinary sanitary field which have been scarcely touched in any state work. The best work with hog cholera is yet crude and imperfect. The best state work with cattle mange and scab is not well organized and efficient. It has been altogether too much the custom for sanitary boards and state veterinarians to pay no attention to such diseases as hog cholera, and infectious abortion, because they present very difficult problems. We do not even know how swamp fever spreads.

Stockmen ought to be able to hope that hog cholera may soon be recognized as a disease which sanitary authorities both state and federal should deal with vigorously, and from which they may hope to secure satisfactory results. Any one at all familiar with this kind of work knows that the control of hog cholera must necessarily be very expensive work, i. e., expensive in total dollars used, but not necessarily expensive when the annual losses and volumes of business are considered.

Can there be any question but that the appropriations usually provided by states for veterinary sanitary control work have been inadequate and unwisely inadequate? Can there be reason-

able doubt that money intelligently used by an efficient sanitary machine is capable of bringing to the state an interest rarely earned by public investment.

Consider for a moment the entire live stock values of Michigan. What in proportion would an annual appropriation of \$50,000 a year be for your sanitary control work?

Perhaps some of my audience is still saying, "but how did you get so much money for this work in Minnesota; that is what we are anxious to know." Well, in the first place we have not "so much money." The total money appropriated for veterinary sanitary control work in Minnesota is not a large amount for the work. Our live stock interests amount to about \$95,000,000. Our appropriation is only .0007 of this amount of .07 of 1 per cent., and it is important to remember that our live stock interests are not the only ones affected by the prevalence of an infectious disease or even a threatening probability. Directly or indirectly all other financial interests of our state are involved, for animal husbandry is essential and fundamental in agriculture, and prosperous agriculture is an absolute essential underlying civilization.

An agricultural state can ill afford not to spend money generously to protect her live stock interests. Our appropriation is but a trifle in proportion to the interests which we are protecting with it.

But you are still saying, "yes, but how did you get the money?" The answer is simple. It has been a process of evolution. In order to secure large and increasing appropriations continued through any number of years it is absolutely necessary that the live stock sanitary authorities must do efficient and conscientious work. Funds must be handled with the most scrupulous honesty and managed so as to bring the best possible returns for the state making the investment. It is necessary for such authority to have the confidence and backing of live stock interests and veterinarians of the state. And it must be clear that large appropriations and important legislation are not for the board—clear that the board is merely an agent responsible for wise handling, and clear that funds and the benefit of what seems

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strong legislation merely pass through the board to the live stock owner and a general public that is dependent on prosperous animal husbandry.

We ask the Minnesota legislature for money, showing proper account of just what we have done with our money in the past, and just what we expect to do with what we are asking for. We make it a point to secure the friendship and personal interest of each stock owner with whom we have dealings. We ask the legislature for money and our friends write in or telephone that the sanitary board must have its appropriation and that is all there is about it. We work hard and get our friends to work. You have the entire formula.

Following up now the preceding application of principle and method, let us summarize in a statement of fundamentals of good live stock sanitary control legislation.

#### STATEMENT OF FUNDAMENTALS.

*Organization.*—The controlling body should consist of five members. At least three of these members should be ex-officio, representing some of the following institutions: Agricultural College and Experiment Station, State Live Stock Breeders' Association, State Veterinary Association, State Dairy Association, etc. The other two members may be either ex-officio or appointed by the governor. The term of office should be five years, one term expiring each year. Three of the members should be directly interested in live stock. Two members should be graduate veterinarians.

Board members should receive no compensation except actual expense outlay.

Meetings of the board should usually be quarterly with provision for special meetings on proper call.

There should be close organic relations between local boards of health and health officers, and the State Live Stock Sanitary Board.

The executive officer of this board should be in fact an executive officer employed by the board and not a member.

*Duty and Authority.*—The essential duty and proper scope of this work is to protect the health of human beings from diseases of domestic animals and protect domestic animals from infectious diseases. The essential duty should be sanitary police work, not research. Board members should do no field work in person. The Board should have full and sole power to select, employ and dismiss all employees of the Board. It must have authority to inspect, to quarantine, to issue regulations, to kill animals under proper restrictions, and to prevent importation of infectious disease.

The state board should have authority to adopt and enforce needful and reasonable regulations, which should be as few and in as positive terms as possible.

*Legitimate Use of Funds.*—The use of board funds should be limited in use to protection of human health, control of infectious disease of animals, preventing importation of disease, compensation to owners for stock destroyed, and for restricted lines of investigational work with diseases of animals when the state has not already provision for such work in another institution.

*Miscellaneous Features.*—Report should be made to the governor annually or biennially. It should be incumbent upon any person who knows of infectious disease of live stock to report to the local health officers or to the state board.

Owners should be given all reasonable protection by privilege of protest, appraisal, and reimbursement under proper restrictions and for specified diseases, but protest should not be permitted to delay necessary sanitary measures.

A very large proportion of field work with infectious diseases of animals should be done by veterinarians employed on full time by the board and not by private veterinarians acting as deputies, except under rare conditions, when the work may be done as well and more economically by using local men.

The sale and use of tuberculin and mallein should be under proper legal restrictions to prevent fraud. The distribution of federal or state tuberculin should be entirely through the state board.

In control work with tuberculosis and glanders, all cattle and horses that have been seriously exposed to plain cases of the disease should be tested. Provisions should be made for securing full carcass salvage by having tubercular cattle killed under inspection.

There should be legal provision to prevent diseased stock from running at large. Sale or trade of stock that is diseased or suspected of infectious disease should not be permitted.

Penalties for owners, transportation companies and health officers should be severe enough to command respect. Expense of quarantine should be borne by the owner when stock is taken from his possession and at the owner's expense when it is left in his possession.

I believe that the state which can put these fundamentals into carefully worded law and regulations is going to be pretty safe in the future so far as infectious disease of live stock is concerned.

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#### EXAMINATIONS TO BE HELD BY STATE VETERINARY MEDICAL EXAMINING BOARDS IN JUNE.

*(As per advice received.)*

COLORADO—June 3-4, Room 18, Capitol Building, Denver.

LOUISIANA—June 8-9, Baton Rouge. First day will be devoted to business session; the second to examinations.

NORTH CAROLINA—June 23, Monroe.

PENNSYLVANIA—June 20-21, 9 A. M., Room of Civil Service Commission, 8th floor west, City Hall, Philadelphia.

**REUNION AFTER TEN YEARS.**—The class of 1900, New York American Veterinary College, held a meeting in the college building in the afternoon of April 16 and a dinner in the evening, in accordance with a compact made on the day of their graduation, to meet and dine together every ten years.

The meeting consisted of roll-call, and each member present signing a certificate designed for each member of the class. The certificate to serve as a record of who was present. Those of the class present at this, their first reunion, were: Drs. C. E. C. Atkins, Bridgeport, Conn.; A. Eichhorn, Washington, D. C.; J. William Fink, N. J.; J. J. Hayes, Jr., New York, and W. Arthur Young, Utica, N. Y.

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## LIP-AND-LEG ULCERATION (NECROBACILLOSIS) ITS CAUSE AND TREATMENT.

By JOHN R. MOHLER, V.M.D., WASHINGTON, D. C.

*(Continued from the May Issue.)*

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### CAUSE OF THE DISEASE.

There can be little doubt that the disease is primarily the result of abrasions of the skin and other tissues, allowing the access of the causal organism. The latter may be a natural habitant of certain localities or of certain vegetation. One factor that is predisposing in these cases is a prolonged drought which renders the feed scarce, inducing the sheep to browse on thistles and roughage which cause the necessary abrasions. In fact, it is frequently noted that after rains, with the consequent growth of luxuriant feed, the disease becomes checked and the affected animals rapidly recover. There seems to be some connection between dry weather, or rather very dry feed, and the appearance of the disease. While there are many factors in dry herbage liable to produce slight abrasions of the lips necessary for the entrance of germs, in succulent pastures there are few or none. However, such abrasions by themselves will not produce the disease, but when they become infected with the germs of necrosis, lip-and-leg ulceration follows. The necrosis bacillus, which is very widely distributed by nature, will not enter a healthy tissue, requiring, as it does, an abrasion, puncture, or wound through which to gain access. Of course a spine or prickle, if contaminated with these germs at the time of puncture, will act as a direct agent of introduction.

In order to obtain some information on the question as to whether the object making the abrasion is itself infected or if

the wounds made by noninfected bodies become contaminated subsequently to the injury, two specimens consisting of bunch grass and shad scale were examined and inoculated into experiment animals, but with negative results. Of course these findings are in no way conclusive, merely indicating that the infection was not present on the particular specimens examined. On the other hand, tags of wool examined and tested on animals in the same manner gave positive results in two instances. The manure of sheep was also examined to ascertain if, as in hog manure, the organism exists there normally, but in no instance was the bacillus observed. In order to prove or disprove a theory that had originated in one of the infected districts, a careful study of the foot lice of sheep was made in order to determine if they played any part in the transmission of the disease, but these results were likewise negative.

There are several conditions which are responsible as predisposing factors for infection by this organism.

1. Lambs often become affected with sore mouths by coming in contact with the infectious principle. Hard, dry scabs, warty in appearance, are produced frequently, covering the entire lips, and which upon being removed leave a raw, granulated surface with or without an exudate of pus. These lesions may be present in lambs before they are weaned, in those that have been weaned, or in lambs which are forced to the range for hard, dry feed after being on succulent forage. It is not, however, the feed or the pasture or the fact that they have just been weaned which of itself causes the lesions; but in addition to these predisposing causes, the necrosis bacillus becomes present and the disease continues to spread.

2. Sheep are sometimes forced to wade through alkali gumbo mud to reach water in the lakes and reservoirs when they become low. This mud becomes matted in the hair and wool of the legs, and becoming dried by the sun and winds may be rubbed off, pulling hair and skin with it, and thus opening the way for the entrance of the necrosis bacillus, followed by ulcerations on the legs.

3. In the winter time the tissues, especially of the legs and sheath, may become devitalized as a result of freezing or of frost bites, thus allowing the necrosis bacillus to gain lodgment and develop.

4. Injuries in the region of the legs and feet due to thistles, cacti, briars, bruises, etc., and wounds of the lips as a result of picking up harsh forage or frozen forage or in breaking through crusted snow for feed, provide favorable conditions for the entrance of the bacilli.

While recognizing the importance of the remote cause, it is to the proximal cause that we give credit for instituting the disease process under consideration. For instance, in lip-and-leg ulceration the proximal cause is the *Bacillus necrophorus*; the remote cause may be a puncture of the cactus. Note here that the proximal cause is invariable, the remote cause variable—for, instead of being the cactus, it may be a sharp-pointed particle of food. Again, the origin of necrotic quittor in the horse may be a nail in the foot, tread, scratches, etc. It is a variable source. But when by our investigation we find the necrosis bacillus associated with this process, we are warranted in laying hold of that micro-organism as the proximal cause—the cause which gives title to the disease process, or which, on the other hand, may receive its name from the disease. So in necrobacillosis of the intestines in calves. The immediate cause of the necrosis is the necrosis bacillus; the remote cause may be any bacterial agent capable of injuring the mucous membrane, or chemical effects connected with the feed—anything, for that matter, that could produce a catarrhal or eroded condition of the intestinal mucosa.

Lodgment in the tissues of the body of a susceptible animal is all the necrosis bacillus requires. Once this is secured where it may develop and throw out its deadly volatile toxin, all tissues with which it comes in contact become alike a prey to its necrosing action. As a result we may have necroses of the skin, muscle, hoof, cartilage, bones, mucous membrane, navel, and internal organs. In order to determine the presence or

absence of the necrosis bacilli in these tissues inoculation experiments furnish an important and definite aid in diagnosis. The tissue alteration in the rabbit after inoculation with this bacillus is so characteristic as to become an essential factor in the identification of the organism. Furthermore, the work of recovering the necrosis bacillus is much simplified by the injection of these animals, particularly if the bacilli are present in very small numbers in the specimen to be examined.<sup>a</sup>

#### ECONOMIC IMPORTANCE OF THE DISEASE.

In considering the economic importance of this disease it is necessary to remember that many other infections are produced by this organism in many other species of animals, some of which are more grave than lip-and-leg ulceration. The presence of the latter disease on the range would indicate the possibility of the causative germ affecting other susceptible animals in any tissue in which it might find lodgment. Thus the importance of this organism is far beyond even its relation to lip-and-leg ulceration, since it affects calves, pigs, goats, adult cattle, horses, deer, rabbits, dogs, and chickens, and various forms of necrobacillosis may occur in these animals on premises contaminated with the infectious principle of this disease. Therefore, as a large majority of species of domestic animals are susceptible to this infection, and as a constant relation may exist between an attack of one form of necrobacillosis and the previous occurrence of another type of the infection in the same or another species of animal, it behooves one to prevent any susceptible animal of whatever species from coming in contact with a diseased one, or with such corrals, sheds, manure, and pastures as might be harborers of the contagion.

In whatever part of the animal body the *Bacillus necrophorus* may have instituted the inflammation which characterizes its

<sup>a</sup> For a detailed study of the bacteriology and pathology of the *Bacillus necrophorus* the reader is referred to Bulletin 67 of the Bureau of Animal Industry, entitled "Necrotic Stomatitis, with Special Reference to its Occurrence in Calves (Calf Diphtheria) and Pigs (Sore Mouth)," and to Circular 91 of the same Bureau, entitled "Bacillus necrophorus and its Economic Importance," both publications by Mohler and Morse, of the Pathological Division.

presence, by whatever name the disease process may be called, be it foot rot, necrotic quittor, necrotic scratches, necrotic vaginitis or metritis, or necrotic stomatitis, there we find a hot-bed of infection and the certain groundwork of an enzootic. Hence, the occupancy of the calving stall by a cow affected with foot rot or by a cow suffering with a vaginitis dependent upon this bacillus is sufficient to insure the development of cases of necrobacillosis. The same principle is involved in the dissemination of the disease through one or more litters of pigs. The very first investigator in this line made the experiment of placing a healthy calf in a stall with two calves affected with sore mouth. The third calf came down in five days with the same malady. The author considered the calves' habit of licking one another as being chargeable with the transmission of the disease.

The proof of the transmissibility of the disease from one species to another was first secured by Dammann, who inoculated a bit of necrotic material from the mouth of a calf dead with the disease into the mouth of a four-day-old lamb. In four days the lamb died, with post-mortem findings which established the success of the experiment. Recent experiments conducted by the Bureau of Animal Industry have likewise shown that necrosis bacilli obtained from lesions of lip-and-leg ulceration will produce similar ulcers in hogs, horses, calves, and chickens which have been artificially infected by them. Moreover, cultures of the necrosis bacillus from warty lips of lambs produced ulcers on the penis of bucks, vulva or ewes, lips of old ewes (see Fig. 1), and between the claws of adult sheep. On the other hand, cultures from foot rot of sheep and from the testicle of a buck produced lesions on the lips and nostrils of lambs, while bacilli recovered from the liver of a cow caused ulceration on the lips and mouth of an adult sheep.<sup>a</sup>

That this transmission of the *Bacillus necrophorus* from one species of animal to another occurs under natural conditions is

<sup>a</sup> In these investigations the writer has been ably assisted by Dr. Jacob Traum, of the Pathological Division, to whom he extends thanks.

amply demonstrated not only by the observations and experiments of this Bureau, but also by the recorded cases of other observers, both American and foreign. Law, in his work on "Veterinary Medicine" (second edition, vol. 4, p. 691), maintains that such transmission is impossible, and also leaves the impression that this bacillus is not transmissible from one organ to another organ of the same species, but these statements are entirely contrary to the experience of those who have observed the disease. (See Figs. 6 and 7.)

On account of the possibility of the wide dissemination of this disease, the loss in condition of the affected animals, the stunting of growth or "setting" of the lambs, and the cost,



FIG. 6.—Head of hog affected with necrotic stomatitis due to the necrosis bacillus. The lower lips has sloughed away, exposing the teeth. (Sheep placed on one eastern farm where losses from this disease in hogs had occurred developed lip-and-leg ulceration three weeks after their arrival. (Photograph by Dr. Herman Busman.)

time, and labor of treating the disease in an affected herd, it is evident that the importance of the infection has not been overestimated. Fortunately, if taken in time, the disease in the vast majority of cases responds readily to treatment, the principal requisite being vigilance on the part of the herder to cut

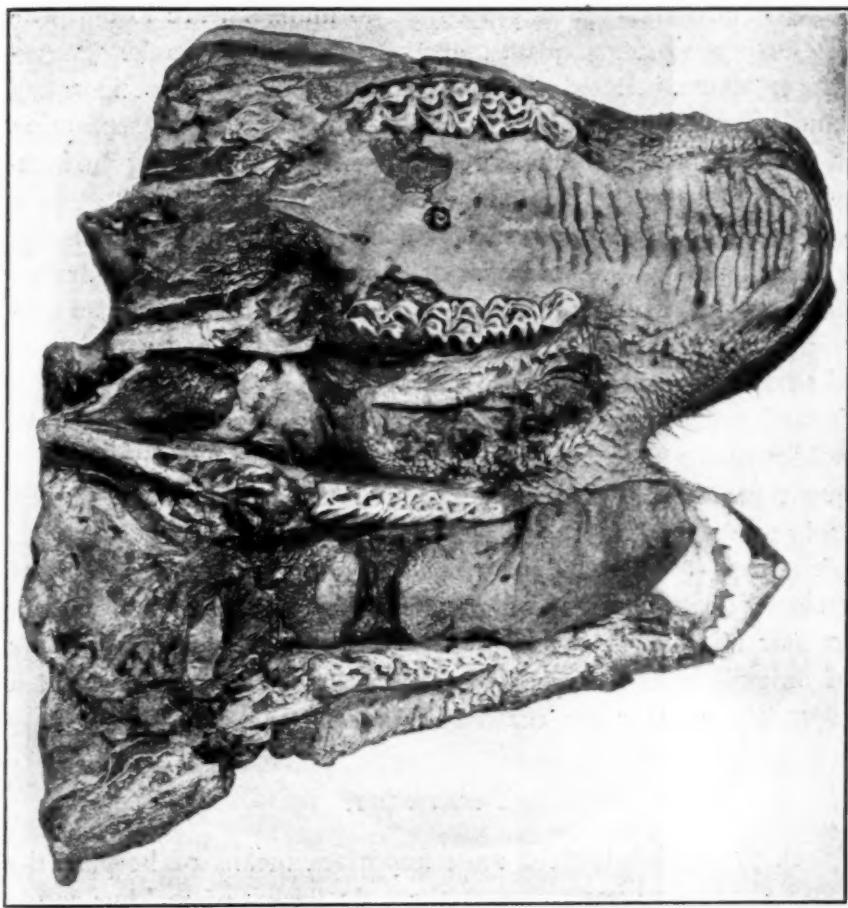


FIG. 7.—Lesions on the tongue, cheek, and hard palate in calf diphtheria, due to the necrosis bacillus. (This calf with 18 others became infected by being placed in a corral where sheep with lip-and-leg ulceration had been. Other calves from the same herd placed on another part of the ranch remained healthy.) (Photograph by Dr. Harvey B. Hood.)

out as soon as they occur all cases of the infection, which should be placed in the hospital band for hand treatment.

The losses have varied considerably in the different States and sections. One company lost 3,000, or 10 per cent., in 1909; another lost 700 out of 2,000 old sheep, besides a shrinkage in the lamb crop due to abortion; while still another flock master placed his loss at \$15,000 from the effects of the disease.

Bucks, more valuable in proportion to numbers, are lost to service or become the greatest menace to uninfected bands. Segregation of the infected sheep, of no great consequence in a dry band, when attempted in a lamb-and-ewe band means separation of the old from the young, resulting in the "bumming" of numerous lambs in the band and a consequent financial loss. Flock masters who have experienced an active attack of this disease in their lambs realize its importance and the necessity for drastic measures in holding the disease in check. Other owners, whose sheep have had only a mild attack, scout the seriousness of the disease, but may yet learn of its devastating tendency under unfavorable conditions. It is evident that sheep are affected but mildly under favorable climatic conditions and with abundant nutritious feed. When thus affected the animal may quickly and even spontaneously recover. But in fall and winter, when bad weather and poor feed tend to lower the powers of resistance, the disease quickly makes great headway with a greater relative virulence, and in consequence a certain number of animals become so badly affected that no hope of cure at a reasonable cost or in a reasonable time may be entertained.

#### TREATMENT.

In prevention lies the most important means of keeping the band clean; in treatment lies the only means of making a diseased band healthy.

Starting with a clean flock of sheep and wishing to introduce new blood into the band, a quarantine of two weeks is advisable; then, if no case of the disease has made its appearance, it will be safe to place the newly arrived sheep with the rest of the flock. A very careful examination of all sheep, especially those intended for breeding purposes, should be made, and in the event of finding any infected sheep in the band these should be cut out, thrown into a hospital band, and treated at once, keeping very close watch on the flock for any new cases that may develop later.

Prevention should therefore be carried out along three lines: (1) Separation of the sick from the healthy animals; (2) close scrutiny of the sheep that have been exposed to infection by contact with affected animals or premises, or otherwise; (3) complete disinfection of all pens, corrals, and sheds, as the necrosis bacilli will retain their virulence under favorable conditions in and around the sheepfold for several years. The walls, racks, and troughs should be sprinkled with a 5 per cent. solution of sheep dip or other similar disinfectant. The manure and a portion of the surface soil of the corral should be removed and the ground sprinkled with the disinfectant solution. If possible, the healthy sheep should be taken to new and uninfected bed grounds and pastured on uninfected range. Experience has shown that sound sheep may be safely pastured on land that has been previously occupied by animals suffering from lip-and-leg ulceration, if a winter's frosts have been allowed to intervene. The germs of the disease seem to be subdued effectively by this means, and pastures which have become contaminated in one season may be considered safe for their customary usage during the following season. However, the impossibility of changing range in many cases, in some not even temporarily, makes quick eradication the more difficult.

The treatment of these afflictions occasioned by the presence of necrosis organisms, no matter how many varieties of the disease may make their appearance, can be reduced to a few words, namely, disinfection and cleanliness, or disinfection and prevention. While selecting treatment for that portion of the flock in which the disease has become actually established, it should be remembered that the principal requisite is to expose properly the affected surfaces in order that the applied remedy may destroy the infectious matter which has lodged upon them. The remedy which will accomplish this most readily and at the same time without giving rise to harmful secondary conditions is evidently the one that should be given preference.

Treatment of this disease by local antiseptics is very satisfactory if begun in time and applied energetically. It should not

be deferred, as better results will be obtained by attacking the outbreak as soon as discovered than can be expected if the disease is permitted to spread among the band or penetrate deeper into the tissues of the affected parts.

In mild, unadvanced cases of the lip and leg form the best results are obtained by removing entirely the scabs and shreds of tissue from the diseased areas by means of a piece of wood sharpened to the proper angle, and applying three or four times weekly a solution of one of the cresol or coal-tar dips, or, what is far better, an emollient dressing containing 5 parts of one of these dips, 10 parts of sublimed sulphur, and 100 parts of mutton tallow, vaseline, or lard. In fact, this form of the disease responds quickly to any of the common antiseptic solutions, and it is astonishing how speedily the majority of these cases improve after careful hand treatment.

In actively progressive cases or in aggravated, chronic forms it is desirable to remove the scabs, scrape all the soft, spongy tissue from the ulcers, and touch the affected area with a 10 per cent. solution of zinc chlorid or nitric acid in the strength of 1 part to 7 parts of water. Many other remedies have been tried with more or less success, but these two solutions have given the most beneficial results. As these solutions are quite penetrating and extremely caustic in the above strength, they should be handled very carefully and applied to the diseased parts only. Unfortunately, many have used an excessive amount of these very irritating solutions on the principle that if a little is good, more is better. A pointed stick, covered at its point with a piece of cloth or a tag of wool, will answer nicely for making the application of the solution. After using either of these solutions, the subsequent treatment should consist of three applications weekly of the previously mentioned emollient dressing, which is antiseptic but not caustic.

Care must be taken with these caustic solutions, as it is possible to do more harm than good if they are carelessly applied. In fact, the indiscriminate use of strong caustics or the drastic scraping of the ulcers with a sharp knife is detrimental rather

than beneficial, as in both cases harm has been done in exposing fresh unprotected surfaces to reinfection.

While a cure of the majority of the chronic and severe cases may be accomplished with four or five weeks of this treatment, the expense of any treatment applied to the small percentage of these cases which resist this method of handling will usually amount to more than the value of the animal when recovered. Therefore, when the number of old cases in the band is small, and the lesions deep, long standing, and resistant to treatment, their destruction is recommended.

Where large numbers of sheep under range conditions become affected and all require hand treatment, the problem is a difficult one. Should the disease attack a large number of animals on the legs and feet, and hand treatment is impracticable, the ulcers may be best treated by causing the affected sheep to pass three times weekly through a shallow trough containing a 5 per cent. solution of any of the recognized sheep dips, but care must be taken to insure the fluid coming in direct contact with the sore parts. Those badly infected cases which show a tendency to resist treatment should be hand treated and the affected parts curetted and properly drained. If the lesions are on the coronary band or hoof, all the diseased or loosened portions should be removed with the knife. As in everything else, diligence and careful attention are necessary for successful results in these stubborn cases.

Treatment of the venereal form especially demands this careful handling. The penis of the bucks, if found diseased, should be forced out of the sheath and the necrotic patches cautiously cauterized with the zinc chlorid or nitric acid solution previously mentioned, and dressed daily by injecting a 1 per cent. sheep-dip solution, a 1 to 500 permanganate of potash solution, or a 25 per cent. solution of peroxid of hydrogen into the sheath until cured. If the penis or inner part of the sheath is extremely ulcerated and the prospects of cure is not favorable in a reasonable time the animal should be killed. Lesions on the external part of the sheath are treated like similar lesions on the lips and

legs. All the tags of filthy wool should be removed, and if the lesions are mild, treat with mild antiseptics every two or three days; if severe or chronic, cauterize first and then dress with mild antiseptics three times weekly. Care must be observed, however, not to overdo the cauterization on this part, as closure of the orifice of the sheath is liable to occur as a result of too vigorous treatment, and a severe inflammation and swelling of these parts may take place. The same strength injections of sheep dip, peroxid of hydrogen, or potassium permanganate, as above mentioned, may be used in the vagina of the ewes, and the external lesions treated the same way as those on the sheaths of the bucks and wethers.

At times an infection with the necrosis germ is seen in the form of abscesses containing semisolid pus and spoken of by shepherds as boils. These are very easily cured by opening them with a knife, cleaning out the pus, and applying the disinfectant and antiseptic solutions already referred to.

The warty lip form of this disease, as already mentioned, runs a course to recovery under favorable conditions in about three to four weeks, but medicinal treatment will materially aid recovery and prevent some of the cases from becoming malignant or chronic with more or less loss of tissue from ulceration. The application of lard, mutton tallow, or vaseline containing 5 per cent. of a recognized sheep dip has been very beneficial after rubbing off the scabs and crusts that form around the margins of the lips and nostrils. The necrosis germ being one which thrives best without oxygen, exposure to the atmosphere will of itself prove beneficial. Pure strength coal-tar dips, peroxid of hydrogen, tincture of iodin, and 1 per cent. pyoxtannin have all been found efficient, but the milder remedy just before recommended has given the best results. The lesions of the lining membrane of the mouth, which sometimes accompany this disease of lambs, may be satisfactorily treated by washing the mouth with a 2 per cent. chlorate of potash solution, a 3 per cent. boric acid solution, or a 1 per cent. creolin solution.

The German treatment, which the writer has not yet tried because it has just been published, consists in the application of 1 part of creosote and 50 parts of cod-liver, linseed, or castor oil externally, and the administration of 2 tablespoonfuls of this mixture internally to each lamb daily.

As an aid to treatment, as well as a preventive measure, it would be advisable to feed to the sheep salt which contains either sulphur in the proportion of 1 part to 12, or crude carbolic acid 1 part to 100—that is, about 4 ounces of crude carbolic acid poured upon 12 quarts of ordinary barrel salt and thoroughly mixed.

After the affected sheep have received local treatment and recovered they should be dipped in one of the recognized sheep dips prior to being turned upon uninfected pastures or premises. Recent developments strongly indicate that much territory is infected, and it is difficult to assert that any given range is entirely clean upon which to run the sheep after dipping. While the dips may destroy unprotected bacilli on the body of the sheep, they have less effect upon those germs which are protected by the grease, dirt, and yolk of the wool. Again, it is often difficult to find all infected animals within the band, and the disease appearing in them following dipping reflects unfairly upon the effects of the dip. Certain sheep-dip preparations do not properly emulsify in alkali water, which is the only kind available in many sections, and the results from such dips are not as efficient as they should be. However, one dipping of these recovered cases must be considered from our present view point as a necessary precautionary measure.

In conclusion, it is my opinion that the place to suppress this disease is on the range, and if much inconvenience and financial loss is to be avoided in making shipments to non-infected States the individual flock master must battle with it at home, holding back all diseased or recently exposed sheep and shipping only those which remain healthy after they have been removed from infection for at least two weeks.

## VETERINARY SCIENCE AND ITS PROBLEMS.\*

BY VERANUS A. MOORE, ITHACA, N. Y.

When your president kindly requested me to speak this evening, I was glad to accept the honor conferred by the invitation, but the selection of a topic for discussion was perplexing. It occurred to me, however, that it might be profitable to set aside the theories and methods by which we perform our daily tasks and scan for a few moments the broader horizon of the profession we represent, for the purpose of defining its obligations and recognizing its problems and possibilities.

Every profession has passed through its period of the application of theories based on the dictates of the untrained mind and eventually returned to the rock of science which for so long it endeavored to escape. "It is a pity," said Professor Abbe, "that the errors of past centuries should still continue to be disseminated long after scientific research has overthrown them. It is easy to start false theories and to believe them, because they are generally simple and plausible, but long years of work are necessary before we get at the secrets of nature." It was not strange that the cloak of mysticism of the ancient medicine man should have fallen upon those who later endeavored to reduce the suffering in dumb creation. It was also perfectly natural that after its wanderings the veterinary profession in America should return to the shrine of truth and drink long and deep at the fountain of science which gives to it all that makes it a profession. The desire in early times to become an artisan without the toils of science or the heeding of nature's laws was doubtless due to the slow progress made toward a knowledge of the causation of disease. Disease has for countless generations been re-

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\*Read before the Veterinary Medical Association of New York City, April 6, 1910.

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garded as of divine or mystic origin, and this old superstition still casts its shadow over us and, consciously or unconsciously, many of us are influenced by it.

When I was a little boy my father, who was a farmer of small means, had a sick horse. The "horse doctor" was called, and after bleeding, blistering and cutting, apparently for no definite purpose, and in a manner very repugnant to my childish sympathies, the horse died. I do not know the cause of death, I do not know whether it was within the power of science or human skill to have saved him, but I can never forget the impression of distrust that well-intended but ignorant man made upon me. In more recent years I have witnessed treatments that were equally as empirical and listened to arguments in which the unfounded opinion of the speaker was set forth as the criterion of all truth. Not long since I saw a beautiful specimen of actinomycosis pronounced a tubercle, heard tuberculin condemned and scientific medicine hurled to the great "bow-wows" by artisans of veterinary medicine. In a like manner I heard practitioners pronounce the cause of death in a large herd of swine, where numbers of individuals were dying, a specific infectious disease, when there was nothing in the symptoms or morbid anatomy to suggest such a cause and where a little effort pointed out the sources of the various poisons that were killing the pigs. I do not wish in any way to belittle the achievements of the so-called practical man, but the profession, as well as the public, must be taught that application can never run ahead of the knowledge to be applied and that the only road to higher achievement in practical professional things is by the further development of pure science.

It is of the fundamental relation between pure science and the science of veterinary medicine that I wish to speak first, and finally to call attention to a few of the problems before us which, it seems, the veterinarian must solve.

No one who has inquired into the reason for the success of the good European veterinary colleges has failed to recognize that the secret of their usefulness was first the acquisition of

knowledge and later the development of means for its application. The fundamental discoveries relative to the nature and treatment of disease that have been made during the last fifty years are with few, if any, exceptions the products of carefully trained scientific men. The great leaders who have crystallized into orderly truth long suspended and heretofore unperceived fragments of learning opened the gates, as it were, to the great fields of knowledge that are to be harvested by the careful, painstaking, scientific workers who follow them. Contrary to the opinions of many, the greatest amount of so-called practical work of a higher order has been attained in those localities that were characterized by their large number of purely scientific investigators and those doing research. This is illustrated by the highly practical and successful methods for controlling animal diseases enforced in Denmark and Germany. The valuable work accomplished by such men as Bang, Ostertag, Fröhner, Kitt, Arloing, Nocard, Hutyra, Sir John M'Fadyean, Salmon and Pearson could not have been done except for their thorough scientific training.

In the light of the uniform truth, that where there is more science there is better practical work, the veterinary profession of to-day should learn a valuable lesson. If the knowledge which guides veterinary practice was analyzed we should find that it has been formulated in large part by those who were seeking the truth, or nature's laws, and often those men have been entirely outside of the profession. Lord Sydenham nearly three centuries ago laid down and acted upon the fundamental proposition that "all diseases should be described as objects of natural history." In discussing the method for the study of disease he said further: "In writing, therefore, such a natural history of diseases every merely philosophical hypothesis should be set aside and manifest and natural phenomena, however minute, should be noted with the utmost exactness." Sydenham's definition has proven to be true. Botanists and zoologists, nay, chemists and physiologists failed to become interested in these morbid processes until the pathologists and bacteriologists came to recognize in

the abnormal conditions we call disease, a wonderfully interesting combination of causes and effects. The success of the veterinary profession, therefore, depends upon the degree to which its members understand these causes and their effects and the fundamental biological laws and conditions which exert an influence over them.

The infectious diseases spread destruction in the animal kingdom with no relief until Pasteur, first a chemist and then a biologist, pointed out the error of existing theories, and showed that the control of these fearful maladies, as well as of the more common infections, depends upon a definite knowledge of the microbes that produce them. This knowledge is being acquired by scientific men who are working out the details crystallized in the principle of infection. Thus bacteriology came to be a definite part of an efficient veterinary curriculum—not that it was wanted as a practical thing, but because the truths it revealed could not be ignored; nor could they be acquired in any other manner.

Immunity is another subject which has come to form an important part in veterinary science. The laws underlying this phenomenon have been brought out by two master minds—Paul Ehrlich, a physician and scientist, and Metchnikoff, a zoologist. Here, again, the veterinary profession has adopted great truths from the field of pure science. It would be easy to continue until the entire range of veterinary activities was covered, when we should find that veterinary science is an aggregation of biological and physical sciences that have to do with the cause, treatment, and prevention of animal diseases. Thus pure science has given great truths from its choicest findings as a foundation for the veterinary profession. This heritage from pure science for the benefit of suffering dumb creation is one of the illustrations of the practical value of research work.

The first important fact that the veterinarian should recognize is that the working of the organs of the animal body is governed and controlled by subtle laws in metabolism and biochemistry, that are just as difficult to determine for a cat, cow

or horse as for the human being. This necessitates for the best results research of the highest order in these subjects. The processes of healing and recovery from disease are vested in the vital forces of the body and in order for man to strengthen these forces he must recognize and understand them. A glance at the history of infection will afford sufficient illustration. In the earlier days of bacteriology the great objective point to ascertain was the infecting organism. This was followed by the still more complicated problem of how the tissues respond to the infection, antitoxins and what they are, antibodies and where they come from. A study of the resistance of the body to invading organisms brought to light the existence of forces heretofore unrecognized; namely, the phagocyte and the complement. While these facts were at first looked upon as interesting fragments of knowledge with no practical value, they have come to be highly important factors not only in preventive medicine but also in practical therapeutics. No one can read Dr. Phillips' paper in the March REVIEW on bacterial vaccines, or Kitt's illuminating article on "The Biological Reactions" (Vol. XXI., p. 353, *Monatshefte für prak. Tierheilkunde*), without appreciating what a vital place in therapeutics and preventive medicine these laws of action and reaction of the tissues to bacterial bodies occupy in modern medicine. At first it seemed that only the great epizoötics were to be controlled by a knowledge of infection but with the introduction of opsonins and autogenic vaccines the more common and troublesome suppurating lesions are being more successfully controlled than ever before as a result of a further and apparently more accurate interpretation of a subtle law of nature. In this work we are beginning to correlate pure science with a most intensely practical phase of professional work.

The problems, however, are not restricted to the general diseases, in which more recent investigations have given such startling results, although here there are numerous important questions waiting for more satisfactory answers. The infectious diseases still point to many unsolved problems. Certain of the

great economic afflictions, such as abortion and sterility in cattle, are causing fearfully heavy losses to the cattle industry, and as yet we are groping in the dark concerning them. Millions of dollars' worth of poultry, sheep and swine annually become victims of diseases that as yet the veterinary profession with all its science and experience is unable to prevent. So severe are the losses that efforts are frequently made to secure relief by the application of theories not emanating from the veterinary profession. If veterinary science measures up to the demands of the public it must solve these problems. It must save our animal industry from the losses now sustained from diseases which should be prevented.

The great scourge of cattle, tuberculosis, is still at large in spite of the efforts of the veterinarian, the findings of the pathologist, and the warnings of the sanitarian. Although this is a widespread disease, it is of such a nature that its elimination depends more upon the efficient, accurate and honest work of the veterinarian as a practitioner, teacher and leader than upon any other agent. Sanitarians and legislators have wrestled with this problem for nearly twenty years, and there is evidence of more bovine tuberculosis to-day than there was twenty years ago. To whom, then, shall the cattle owner look for relief? We have one of the most stringent laws in the country relative to the control of tuberculin and the reacting animals, yet the state is reaching annually but about .2 of one per cent. of the cattle within her borders. If our eleven hundred veterinarians were each exerting an instructive and helpful influence upon the cattle owners, relative to the true nature of tuberculosis, how long would it require to change the lethargy of the public concerning this affliction to an active campaign against it? We should heed the work of Dr. Petersen and others in Denmark, who organize the cattle owners into clubs for the purpose of teaching them about tuberculosis and instituting rational measures for its elimination. Here the veterinarian becomes a true leader as well as a practitioner.

Tuberculosis has been discussed until it seems to be a threadbare topic. However, we must face the facts. It is for the veterinarian to discern, recommend and carry into effect policies and methods that will produce the desired results. Here, again, we must remember the relation of pure science to the success of the practitioner. Nowhere in the realm of disease is this interdependence better illustrated than in the case of tuberculosis. Read the record of the efforts to control it in Massachusetts and in our own state and the fact will be perfectly clear that application went ahead of the knowledge to be applied, so that after much waste of time and money a flag of truce was unfurled for the purpose of ascertaining the facts relative to this insidious malady.

Although methods of control went ahead, as if the disease were thoroughly understood, the results of research have shown that many of the assumed things concerning it are still undemonstrated. There are many interesting phases of this disease with which the veterinarian should be familiar, such as evidence relative to the portals of entry for the tubercle bacilli in cattle and experimental animals; the penetration of the tubercle bacilli into the lymph nodes; their passage through the mucous membranes as first pointed out by Nicolas and Descos and later confirmed by Ravenel; the means for the migration of the disease within the infected body; its mode of dissemination; and methods for its diagnosis. Of all these I wish at this time to refer briefly to but one, namely, the diagnosis by the use of tuberculin. It is in this connection that practitioners have experienced most difficulty. When the reaction is typical the interpretation is clear; but when the general effect is missing and the temperature does not rise above a possible normal plus the effect of some slight excitant the interpretation has been varied. Some have condemned, others passed such animals. The advocate of each of these interpretations bases his conclusion on experience, which often is not large. When, however, the theory for the action of tuberculin put forth by Eber some ten years ago, and more recently modified by Smith, becomes better understood, the ap-

parent discrepancies will disappear. This theory, which explains the varied phenomena, attributes the thermal reaction to the effect of the specific substance, thrown off by the tissues as a result of stimulation by tubercle bacilli, upon the tuberculin. This action consists in the modification of the tuberculin or in the splitting off of a substance which acts upon the heat centres. This specific substance seems to be retained within the tubercle or its immediate surroundings. In case of arrested or walled-off tubercles it is shut within the capsule and cannot be reached by the tuberculin. In case of very early tubercles or partially arrested ones there may be an insufficient quantity of the specific substance to change enough tuberculin to cause a typical reaction but sufficient to bring about a disturbance of the temperature equilibrium. I have dwelt upon this point somewhat at length because it illustrates how important it is for the practitioner to know the facts or the working hypothesis in order to understand his problem. I have spoken of tuberculosis, which is largely a question for the rural practitioner, but the problems in connection with glanders are strikingly similar for the city veterinarian.

There are two other problems of great practical value which, so far as I can ascertain, are for the veterinarian to solve. I refer to the inspection of dairy herds for the production of clean milk and to local or state meat inspection. To be sure, laymen can and do accomplish much by way of securing better light, ventilation and more cleanly conditions generally; but the real question so far as the consumer is concerned is, is the milk safe? A clean milk is not a clean milk in the sense this term implies if it comes from cows suffering with general disease or localized udder affections which may cause the milk to contain micro-organisms injurious to human health. Dairy inspection, therefore, should be made by a trained veterinarian, or if by a layman for cleanliness, it should be supplemented by the veterinarian to pass upon the health of the animals. More than this, these dairies should be inspected frequently, not at long intervals. The Copenhagen Milk Supply Company have the cows from which

they obtain milk inspected by thoroughly trained veterinarians every two weeks, and the inhabitants of Copenhagen claim to have the lowest mortality in children. The inspection most necessary is one that will detect cattle that are physically unfit to produce milk for human food; and for this work there is but one class of trained men.

Local meat inspection is a most important work for the veterinarian. The people of the country will soon demand the service, and it is the duty of the veterinary profession to see to it that it is a workable and efficient one. Here the essential danger to be avoided is the consumption of meat from diseased animals. This carries with it the necessity for the employment of men versed in comparative pathology, who can recognize diseased flesh and make an accurate diagnosis. The bringing about of a satisfactory state or local meat inspection service devolves, therefore, almost entirely upon the veterinarians of the state, for they are the only men trained in the diseases of animals. In fact the relation of animal diseases to those of the human species is such that there should be a thoroughly trained veterinarian on every board of health. The dairy and local meat inspection services therefore are two very important lines of work in which the veterinarians should be leaders, for there is no other vocation or profession which combines the necessary groups of sciences necessary to properly fit one for such work.

Without entering into the realm of routine practice, in which I am convinced there is room for many improvements, the problems connected with the control of tuberculosis, glanders and rabies; the prevention of sterility and abortion in cattle; the prevention of the destructive diseases of poultry, swine and sheep; and the establishment of efficient milk, dairy and local meat inspections, are weighing heavily upon the veterinary profession. These are of great economic and sanitary importance, and the people are looking to the veterinarians for relief because the science of their profession and no other includes the basic knowledge necessary to deal with them.

If I have been at all clear it is evident that, with many of the diseases at least, prevention is of greater significance than treatment. The medical professions have for past ages dealt with the treatment of diseases or the checking of their spread in case of epidemics or epizoötics. With the introduction of preventive medicine we have come against a problem the solution of which seems to be more difficult professionally than any heretofore encountered, namely, the education, type and quality of the men to practice it. The necessity of the practitioner being a thoroughly trained man is no longer questioned. Men versed in the science of veterinary medicine can do successfully routine practice, but the practitioners of preventive medicine must not only be skilled in the science and art of their profession but they must also be leaders. Animal owners will call a practitioner and gladly follow his instructions when a valued cow or horse is dangerously sick, who would never care to ask for his advice relative to the application of preventive measures. The successful practitioner of the future must of necessity, therefore, combine a thorough knowledge of the healing art with the personality characteristic of a leader. When we realize that in this country there are over \$4,000,000,000 worth of livestock, exclusive of poultry and pet animals, with an estimated annual loss from diseases which should be prevented of over \$300,000,000, the obligation of the veterinary profession is clear and its possibilities need no further elucidation.

I cannot close these fragmentary remarks without calling attention to one or two points that must be observed in securing for the profession vantage ground adequate to its responsibilities. The first and I believe most important of these is the doing away of the assumption that it is possible for an uneducated and untrained boy, earnest and well intended though he may be, to acquire in three short college years sufficient knowledge of the basic sciences included in veterinary medicine to fully meet the ever-growing demands upon the profession. The time has come when these demands of the country for the control of the diseases of the food-producing animals as well as of beasts of

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burden must be satisfied. Already there are many who believe that the men who are trained in agricultural colleges can with a very little special instruction relative to disease and treatment do better work than the untrained veterinarian; and certain agricultural colleges are giving such instruction. Knowledge is power and it is common property, to be possessed by those who are willing to acquire it. It is clear that something must be done to equip and discipline our veterinary students so that they shall be qualified to become leaders among the educated men who are rapidly coming to be the animal owners of the country.

Finally, we should not forget that leaders are born, not made. There must be the initiative and determination which colleges cannot give. We are justified, however, in the assertion that if the colleges provided the necessary mechanism for imparting the knowledge and giving the training that must necessarily accompany initiative and leadership, they would become in this country, as in Germany, magnets that would attract those naturally qualified to take up veterinary work as a profession. To attain the ideal will require much time and hard work, but I have faith to believe that in this country as in Europe, the veterinary profession will meet its obligations and appreciate its possibilities.

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**SUCCULENT FEED FOR LAMBS.**—Recent experiments at the Iowa Experiment Station show that with corn at ordinary prices cheaper gains on lambs may be made with dry feed than with roots or silage. When corn and silage are low in price, the gains made with silage are a little cheaper than those made with dry feed. The largest total gains were made by the lambs getting sugar beets, and the finish of this lot was also a little better. The lot getting turnips and cabbage required the largest amount of dry matter for each 100 pounds gain. Silage and dry feed came next. The least amount of dry matter was required where sugar beets and mangels were fed. The chief objection to mangels and sugar beets is the large amount of hand labor required to raise them. The results of these experiments are published in Bulletin No. 110 of the Iowa Experiment Station, which may be obtained free by writing to Director C. F. Curtiss, Iowa Experiment Station, Ames, Iowa.

## THE VETERINARY COLLEGE AT BERLIN.

By L. M. STECKEL, D.V.M. (O. S. U.).

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**FIRST IMPRESSIONS.**—It was a cold and dreary December morning in 1908 when my eyes first cast sight upon the ROYAL VETERINARY COLLEGE (Koenigliche Tieraerztliche Hochschule), Berlin, Germany. The campus and buildings were covered with a layer of grayish white snow, and, save for a uniformed employee here and there, the many winding walks seemed to be deserted. To a stranger who figured this to be a lively place it made a very solemn impression. But this suspense was not to last long. Just as quiet as it was outside, the interior of the many buildings presented an active and busy assemblage of students and professors writing, lecturing, operating, or at the microscopes.

The college buildings are arranged in a somewhat irregular circle. Each building or institute is named after the course of studies pursued therein and is under the supervision of one of the professors who is the head of the respective branch of study, while the rector is the administrative head of the college.

When presenting myself to Professor Schmalz, the rector, he greeted me very cordially and spoke highly of the advanced strides taken by the United States in veterinary science. The other professors, too, complimented me on my coming from the land of limitless opportunities where several of the great discoveries in the veterinary field have been made. They referred especially to "Texas fever" and "hog cholera," which for years have baffled the most noted scientists, and for which discovery we have earned the appreciation of the entire world.

The students were also glad to entertain an American, inviting me to take part in their various college affairs, among

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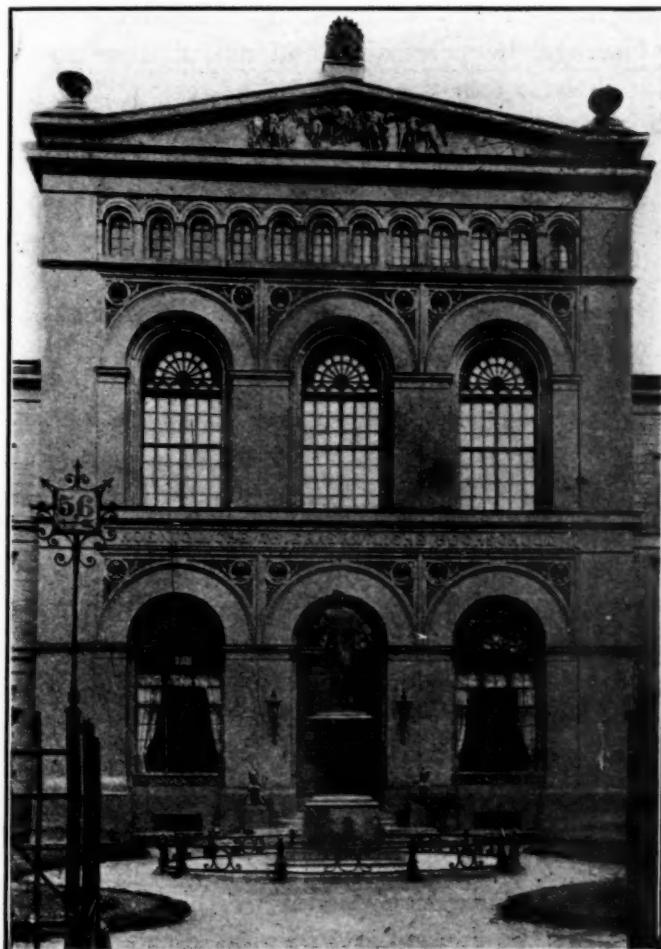
which "Die Kneipe," or the gathering in the beer halls, plays an important part. My attendance at the various lectures and clinics afforded me an opportunity of becoming acquainted with the conditions in one of the leading veterinary institutions of the "Fatherland," or perhaps in the world.

**PROFESSOR SCHUTZ'S HEADQUARTERS.**—One of the interesting centres of attraction for the students of the college is the Pathological Institute, of which Professor Schutz is the predominant figure. His large lecture hall is always filled to the last seat. Besides the regular students there are a number of post-graduates from Germany, Russia, Japan, and the United States, army veterinarians detailed to attend the courses, and many other visitors. All come to hear what the spry, three-score-and-ten, gray-haired professor has to say. For, the only way to learn from this world-famed scientist is to come there and listen to him, as he has not written any book on pathology and does not lecture from any. He prints, so to speak, his work and original investigations on the minds of his hearers right there in the classroom.

A loud shoving of feet (the custom there) is heard. An unassuming man appears on the platform. With a modest nod to the audience and a glance to see that all his necessary colored crayons are on the table, he commences to talk. His lecture today is on diseases of the heart. At first he explains the anatomy of the heart and its normal functions, at the same time not forgetting to give a gentle scolding to the students for not knowing this already, assuming that they don't. Then gradually, but clearly and with oratorical forcefulness, he goes into the details of the disease. Quite often he springs surprises by some of his statements, as, for instance, when he said that everybody believes the heart muscle to be red while in reality it is gray. In his lectures Professor Schutz continually refers to the original researches and investigations, which he and his assistants are constantly carrying on in the laboratory.

**THE VARIOUS CLINICS.**—At Professor Froehner's Clinic, the students stand in a sky-lighted clinical hall in a semicircular

manner, a horse and a uniformed employee in the centre. On a table near by there stand a beaker of urine, several test tubes with results of blood and urine analyses, and a chart showing the



ENTRANCE TO ADMINISTRATION HALL, ROYAL VETERINARY COLLEGE, BERLIN.

fever curve of the patient. One of the students in a white coat is the referee for the day. He has already the day before examined this horse and is now ready to report his findings. It

is a case of contagious pleuro-pneumonia (Brustseuche). The referee gives the history of the case as told by the owner, a description of the patient, the condition of the respiratory, digestive, urinary, nervous, and locomotary apparatus. Professor Froehner verifies the referee's statements by examining the patient carefully, namely, by percussion and auscultation and leading the patient about if that is possible. The referee then gives the prognosis and treatment of the disease, with reasons for his statements. After clinic Professor Froehner makes a round through the stables and acquaints himself with the conditions of the old and new patients and consults with his assistants as to the best method of treating them.

We next go over to the busy polyclinic conducted by Professor Kaernbach. Here there are every day about fifty horses brought over from the city and country to be examined for any and all diseases which affect the equine race. To this clinic the seniors are assigned in sections, and, with the aid of the professor and his assistants, are taught to make a diagnosis and recommend treatment. Each student is given one or more cases. He examines the animal carefully, questions the owner as to the time the sickness occurred, what remedies he has already given; for in many cases the animal has already had a taste of many sweet and sour medicines before coming to the clinic. The student then allows the horse to be led before the professor and is questioned as to his findings and the reasons for the same. The professor confirming the diagnosis and the treatment, the horse is taken into the hospital to be attended. Any and all operations not of a serious nature are performed here by the students under the direction of one of the assistants. Other cases are sent to the medical and surgical clinics for operations, or to be under observation in case an infectious disease is suspected.

From here we step over to the busiest as well as the largest place on the campus—the surgical clinic. As in the other departments, the students are divided into sections and assigned to appear at various times for practice in operating. At first

the students learn minor operations under the supervision of the assistants, and then they attend the major operations as carried out by Professor Eberlein. In the main operating hall there is an operating table and a throwing mat, the latter to acquaint the students with the most common ready-to-hand method of



AT THE POLYCLINIC.

throwing for an operation in the country. Before proceeding to the operation, Professor Eberlein explains in detail the various methods of operating the particular case in hand, the reasons for the same, the dangers connected with the operation and the sequelae, or the bad results which might follow. He particularly emphasizes the fact that the first requisite for a successful operation is asepsis, and this, coupled with skill, will bring best results. At this department the students are infused with the

true idea of veterinary practice, for while there are many fields for the veterinarian's activities, still the paramount issue of a veterinary college is to send out its students as able surgeons.

Another interesting place is the clinical building for the



WAITING FOR THE PROFESSOR.

treatment of small animals. This is under the direction of Professor Regenbogen and his two assistants, who, though greatly overtaxed, manage to examine as high as seventy-five animals during the polyclinic hours. Here, as naturally would be expected, the gentle sex is represented in large numbers. They bring their pet animals, dogs, cats and birds, big and little, young and old ones, pedigreed and curs, that the professor may look at their ailments. An employee distributes tickets to these visitors, thus insuring them a "next," and they wait in the re-

ception room until the professor arrives. During the clinic several of the students assist in the examination and treatment; some sit by the microscopes, while others write out prescriptions and record the cases. Here is some of the routine: A case is brought in; it is a dog suffering from indigestion. The animal is placed on the table, is examined carefully as to his visible mucous membranes, the pain he evinces on palpation in the region of the stomach and intestines, and with the story of the owner as to his refusal of food and so on, the professor explains to the students the diagnosis and gives a prescription for the case. Then another dog is brought in. This one is scratching himself, declares the owner. The skin is examined and from the reddish spots they scrape a little on one or more slides to be examined microscopically, and treatment is then recommended accordingly. Other cases were, a chicken with diphtheria, a cat run over by an automobile, a canary bird which has suddenly stopped singing, and many injured dogs which had to be bandaged. The cases which are of a more complicated nature are left in the clinic for one or more days to be operated on, or to be under observation or treatment for skin diseases, distemper, or rabies. After the polyclinic hours the professor retires to the operating room and with the aid of the assistants and students performs some of the necessary operations.

**THE HYGIENIC INSTITUTE.**—As a fitting change from the animal clinics we next wind our way to the Hygienic Institute, the home of the minute bodies or bacteria. What a change has come in the study of bacteria during the past quarter of a century! In place of just a room there is now an entire building dedicated to the study and culture of these organisms. The Hygienic Institute was formerly under the able and well-known Professor Ostertag, the pioneer of "meat inspection," but since the German government has recognized the importance of veterinary science for the welfare of the country and has called away this scientist to be the director of the veterinary division in the Imperial Health Department, the vacancy was filled by Professor Frosch, a medical man who has done considerable work in the

field of bacteriology. The course in this study is given by lectures and laboratory work. In the latter the students are divided into sections and receive, so to speak, "a course," and learn the essentials in the modern study of bacteriology. Professor Frosch and his assistants do a good deal of investigation work and have also charge of the serum production, which the college does for the state. Besides the regular students, there are older practitioners, army veterinarians and others to whom special courses are given.

In connection with the Hygienic Institute there is a Pathological Museum which is the best and most complete of its kind. Here we must again extend our appreciation to Dr. Ostertag, for it was he and his assistant, Dr. Stadie, who with tireless efforts made this museum what it is to-day. The laboratories for the study of piroplasmoses, and meat and milk hygiene are also in this building.

#### SOME OF THE OTHER PLACES.

**THE PHYSIOLOGICAL INSTITUTE.**—This is under the direction of Professor Abderhalden, a former co-worker in the chemical-physiological laboratory of the famous Emil Fischer. Dr. Abderhalden's lecture hall and laboratories resemble an electro-chemical workshop, as extensive experiments are carried out to illustrate the principles of physiology and physiological chemistry. A great deal of attention is paid to the teaching of physiology of the sense organs.

In the anatomical building there is a fine museum of anatomical specimens which is indeed a credit to this wonderful institution. Among the many interesting things found there is a mounted skeleton of the great charger ridden by Frederick the Great.

**THE COLLEGE LIBRARY** contains a great many volumes of the principal veterinary books, as well as a number of agricultural books of interest to the veterinary students. Each student by signing a card can borrow from the library as many books as he may need for reference or study purposes. There is also

a reading room attached to the library for the use of the students and professors.

THE COLLEGE DAIRY consists of a small select herd of the principal breeds of cattle. It serves as an object lesson for the study of the dairy breeds and to acquaint the students with the modern methods of keeping a sanitary dairy.



NARCOTIZING A DOG PRIOR TO THE OPERATION.  
(Apologies to "Sport im Bild.")

SPORTS.—A word about the students' sports. There are a number of "corpses," or, as we would perhaps call them, "fraternities." These are organizations for the purpose of promoting social friendship among its members. It is in these that the fencing sport is mainly carried out, as each member is required to practice and participate in several fencing contests. Then there is a students' organization whose aim is to promote good fellowship among all the students and to care for any sick student. The student organization organizes clubs for dancing, skating, tennis, football, horseback riding, theatre and excursion

parties. The excursion parties embrace visits to places of interest of every description, as well as pleasure excursions to the country. It may be said here that the German students are more and more turning away from the "Kneipe" and indulge in the more strenuous American and English sports.

**LAST IMPRESSIONS.**—The Royal Veterinary College at Berlin, like most of the European colleges, has the benefit of age. It is old in traditions and has withstood the test of time. It has had men, great men, whose ambition in life it was to improve the college, and these men devoted their lives to the betterment of the study of veterinary medicine and to place it on an equal footing with the other learned professions. This college has as its leaders men who, like their predecessors, are a credit not only to the profession, but to the whole German nation, and the men who go forth from here can not fail but become leaders in the various lines of veterinary medicine.

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THE North Carolina Veterinary Medical Association and the State Live Stock Association will hold a joint session at Monroe, June 23 and 24.

**FEEDING WORK HORSES.**—The Iowa Experiment Station has been conducting a series of experiments in feeding work horses. It has been found that oats are too expensive to feed in large quantities, and that the ration may be greatly cheapened by substituting oil meal, cottonseed meal, or gluten feed. The health, spirit and endurance of the horses was the same when fed corn in combination with one of these feeds as when oats were fed. These experiments show that oil meal may be worth as much as \$60 a ton for horse feeding, and cottonseed meal a little more. The horses did a hard summer's work on these feeds without any considerable loss in flesh. These experiments are of great value to farmers everywhere, as the question of feeding the work horses cheaply, and at the same time in such a way as to keep them in good flesh, is an important one. The results of the experiments have been published in bulletin form, and may be obtained free by writing to Director C. F. Curtiss, Iowa Experiment Station, Ames, Iowa, and asking for Bulletin No. 109.

## THEORY AND THERAPY OF MILK FEVER SO-CALLED.

By W. H. DALRYMPLE, M.R.C.V.S., LOUISIANA STATE UNIVERSITY, BATON ROUGE, LA.

Perhaps there is no one condition in the entire category of diseases about which there has been so much theorizing, as to its cause and treatment, as so-called milk fever in cows.

At the present time opinion seems to be divided between a toxin, as the etiological factor, and disturbance to the equilibrium of the circulation through sudden "fluxion," or, in this case, an abnormal determination of blood to the udder of the modern, artificially developed dairy cow, usually subsequent to the period of parturition, producing cerebral anemia. And here we might add, parenthetically, that the results obtained from the more recent methods of treatment seem to have revived the anemia theory, which heretofore had been more or less rejected.

As illustrative of the toxin theory, I quote from an article on the subject which appeared in a British veterinary periodical a few months ago.

The author, Mr. Reginald R. Smythe, M.R.C.V.S., has, among other things, the following to say:

"The theory now generally accepted is that of auto-intoxication, which presumes the disease to be due to a toxin produced by the animal's own body in the udder. The success of Schmidt's treatment seems to bear this theory out."

It is a little difficult to see just how this is so. True, Schmidt's theory, if we mistake not, fixed the disease as an auto-intoxication produced by the absorption into the circulation of leucomaines resulting from decomposition of the colostrum, and directed his use of potassium iodide as an antitoxic agent as well as to limit the lacteal secretion.

But in the light of our present experience with the more recent greater successes with inert agents, so far as antitoxic properties are concerned, Schmidt's original toxin theory would seem to have been considerably weakened.

Continuing, the author says: "It may be that at the time of parturition the breaking down of cell tissue essential to the production of colostrum is associated with the liberation of waste products of a toxic nature in sufficient quantities to produce the symptoms. It may be argued that whatever the animal be, at the period of parturition, the same process is undergone, but it must be remembered that the cow is nowadays merely a milking machine, and that the powers of milk and cream production, secured by selective breeding, are concentrated, or centered, upon the period of parturition. It may also be supposed that the toxin, even if produced in considerable quantity, is in the average cow rapidly excreted or converted by the body defences into some non-toxic body.

Supposing, then, that the normal condition of the animal's body is impaired by an overfat condition, or that atmospheric conditions are of such a nature as to lessen the powers of excretion through such channels as the skin or respiratory organs, might this not account, in some degree, for the occurrence of the disease under such circumstances? The bacterial origin of the supposed toxin is disproved by the absence of the fever always associated with the absorption of harmful organismal products."

In speaking of the modern treatment, the author states: "That oxidation of the toxin is not the object, is shown by the fact that even injection of warm sterilized water is quite sufficient, although the results are much slower, as the pressure within the udder is comparatively low."

We have not tried the warm water treatment, but with unfiltered atmospheric air we have had recoveries, from complete coma to apparent perfect health, in two and one-half hours, which is about as quick as the most sanguine could reasonably expect.

Further, the author quoted says: "Inflation of the udder brings about two objects: It dilates the milk ducts and prevents the cells being in apposition, and by increasing the volume of the ducts, causes constriction of the intricate system of lymphatics, passing through the intralobular connective tissue. This would allow the escape of fluids, which might be laden with toxins, down into the milk sinuses, while at the same time constriction of the lymphatics would diminish absorption. Seeing that the introduction of fresh toxin in the blood stream is avoided, it might be possible for the body to excrete that already present in the system."

Ever since what seem to have been superior results—to those with the iodide treatment—obtained with etherized air, by Kortman; oxygen, by Knusel; atmospheric air, by Andersen, of Scanderborg; and finally, our own personal experience with the latter, the writer has been quite forcibly impressed with the opinion that, no matter what the agent used, the effect is not due to any inherent property of an antiseptic nature, but simply the result of the tension produced limiting the supply of blood in the vessels of the udder, thereby regulating the disturbed circulation and restoring to the temporarily anemic brain something like a normal blood supply. Or, in other words, that the effect, no matter by what agent it is brought about, is largely, if not wholly, mechanical; and that on no other hypothesis could a similar result be accomplished, or cases of the disease aborted, in such a remarkably short space of time in any other way than by correcting cerebral anemia when present, or preventing complete anemia in the earlier stages of the disease.

This, of course, is theory, just as in the case of the toxin advocates. But to our mind it is one, in the light of more recent knowledge and experience, that appeals more readily and intelligibly to the comprehension than those so elaborately built up with regard to a toxin as the causal agent.

Bearing out this idea, it would appear that a number of the continental European authorities evidently favor the "fluxion" theory, and are obtaining excellent results by natural methods in

preventing the disease through the medium of the milk itself. In an abstract from the *Berliner Tier. Woch.*, published in the *London Veterinary Record* last year, Sahlmann and Dommerhold, district veterinarians in Germany and Holland respectively, hold that the calf should receive the necessary colostrum as soon as possible after birth, and not wait until driven to suck by hunger. Their advice is, after calving, to draw just so much milk as is required for the calf, and abstain from further milking. Or, in the words of Dommerhold: "The necessary milk to the calf; do not milk further."

This authority claims that this method has been tested for some years in Holland with the happiest results, especially in the province of Friesland, which contains not only the most milch cows, but also the best.

He explains its success in preventing milk fever by the Continental theory that the disease is due to a cerebral anemia, which is induced by the disturbance of the circulation caused by milking out of a distended udder. "Plenitude and distension of the udder," says the abstract, "no matter whether it is filled with iodide of potassium solution, saline solution, air or milk, regulates the circulation and so prevents the cerebral anemia of milk fever, or corrects it if present."

It is claimed that on one farm of 30 or 40 cows, where this method is always followed, only one case of milk fever has occurred during twelve years, and on that occasion the usual rule was departed from. The udder was unusually large and tense, and milking out immediately after calving was deemed necessary. This was done, and an attack of milk fever followed within two hours.

Besides increasing the tension within the udder, Dommerhold attributes another beneficial effect to infusions of air, viz., that the thick venous blood becomes thinner under the influence of air, and thus flows away more easily.

May we not see in this effect of tension within the udder, in regulating the circulation, and that produced on the character of the venous blood by air infusions, one very similar to that

previously brought about by the restricted dietary and the full cathartic in preventing an attack of this ailment? These latter evidently resulted in a lessening or depletion—thinning, shall we say?—of the blood, with a consequent lessening in the requirement for lacteal secretion, based upon the theory that an active gland is dependent upon a full and rich blood supply, and this upon a generous food supply that is rich in blood-forming nutrients.

In the one case there would seem to be a corrective of the cerebral anemia when present, by restoring equilibrium of the circulation; in the other, a preventive of anemia by regulation of the circulation.

Although the writer has held to the "fluxion" theory for some time, this short article has been prompted at this time by a perusal of the articles alluded to and quoted, and later by reading the excellent contribution on "Nervous Influence in Disease," by Prof. E. A. A. Grange, which he presented at the forty-sixth annual meeting of the A. V. M. A., in Chicago, in which he refers to the disease under consideration.

Dr. Grange quotes Prof. Smith, of Toronto, as informing him of an old country acquaintance, and a close student of such diseases, being of the opinion "that the air treatment produced an altered condition in the circulation of the brain," which statement, as he mentions, seemed to him to strike the nail on the head; although just how the change was produced was not given.

In venturing the opinion, Dr. Grange states: "That this altered condition of the circulation is produced by nervous impression from the udder to the nerve centre; and in this case the impression is introduced into the economy, *not* by sound, but by touch, or contact, from the air of the force-pump on the walls of the milk ducts, from which points it is conducted through an intricate nervous system to the circulation of the brain, where it produces its salutary effect."

Here, then, in Dr. Grange, and in Prof. Smith, I take it, we have at least two prominent authorities on this continent who favor the theory of cerebral anemia in milk fever.

As to the mechanism by which the air treatment, or other agents used to produce tension, produces its effect, as mentioned by Dr. Grange, it is a little difficult to accurately determine except, perhaps, by analogy.

Of course we must realize that all function is controlled by the nervous system, and sometimes restored by a direct stimulus acting reflexly. But in order that nerve centres and efferent branches may act with promptitude, they must be nourished by a more or less normal blood supply.

If, as the "fluxion" theory would seem to indicate, there is a somewhat sudden and abnormal determination of blood to the udder at this period, it would appear to mean a temporary diminution in the general circulation—the delicate cerebral circulation, of course, participating, but which is almost immediately restored when the supply to the udder is limited or retarded by tension within the gland. It is upon this theory, mainly, that we base our opinion of the effect being largely, if not wholly, of a mechanical nature. These remarks are not intended as a criticism of Dr. Grange's opinion, but rather to try to strengthen our own theory, which, after all, is only a theory, but which forcibly impresses us, until absolute facts have been demonstrated by further investigation. Dr. Grange's opinion is very much more in accord with our own than the opinions of those who still advocate the toxin theory of causation.

The writer feels sure that we all, as a profession, appreciate to the full the magnificent work of the great Dane, Herr Schmidt, of Kolding, in connection with his investigations concerning this hitherto fatal disease, and rejoice with him in the honor conferred by his sovereign in decorating him as a Knight of Danebrog. Herr Schmidt has also been awarded a vote of thanks, together with an annual premium, by the Danish Parliament; and in many countries has he been honored with the degree of membership of veterinary and agricultural societies.

If Schmidt's original toxin theory of the cause of milk fever should not, perhaps, be in full accord with more recent experiences, and even should his success with the treatment have been

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more or less accidental—so far as the effect of potassium iodide, *per se*, was concerned—yet all possible credit is due him as being the first to strike at the correct location of the trouble, thereby making possible the magnificent successes that have since been achieved.

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DR. R. P. LYMAN, with his family, left Kansas City the last week in May and journeyed eastward to spend the summer vacation in Connecticut; Hartford being the objective point.

DR. W. L. WILLIAMS, New York State Veterinary College, is conducting an extensive investigation as to the prevalence of infectious vaginitis, also contagious abortion in cattle, and is making a careful study of post mortem lesions by a large number of autopsies conducted at the abattoirs in the large packing centres.

THE KANSAS CITY VETERINARY COLLEGE has arranged a post graduate course of short duration to be given during mid-summer, beginning July 8 and continuing until August 10. This time has been selected because the rush of practice incident to the spring months will be over in most sections of the central west and there usually follows a slack period. At this time practitioners will feel at greatest liberty to take the time to attend a special course; further, they will be able to secure, during this time, the services of an assistant or an experienced under-graduate to care for their clientele while attending a special course, an arrangement not readily made during a regular college session; and also at this time the college Faculty can give post graduate classes undivided attention which could not be done during the winter months. This course is designed to enable the veterinarians to review surgical and visceral anatomy of the horse, ox and dog, and to become thoroughly familiar with the newer surgical operations; also to bring their studies in the various laboratory subjects up to the present advanced standard and thus increase their efficiency as practitioners. Food hygiene is daily becoming more and more important in the public mind and this course is planned to aid veterinarians, who desire a larger part in this newer field of scientific service, to become more fully prepared to meet the requirements for Dairy and Milk Sanitary Officers and Meat Food Inspectors. A wide variety of special studies are open to those who take this course.

## THE PRODUCTION OF MILK.\*

BY MATTHEW WILSON, M.R.C.V.S., WAUKEGAN, ILL.

Milk and its relation to public health is to-day one of the most important topics. Its value as a food we need not discuss. That is a subject perhaps more for our brethren of the medical profession. Its disease-producing qualities, either in a direct or an indirect way, we can also leave to their discussion; but, as one of the great missions on earth of the veterinary profession to-day is prophylaxis or preventive treatment, it becomes our part of the business of preserving public health, to search into the remote causes of its disease or death-dealing conditions, and, if within our power, remove them.

There is an old saying that "an ounce of prevention is worth a pound of cure." Taking that to be true, then, in relation to public health, comparative value with our medical brethren is 1 to 16—the reverse of the heaven-born ratio. The natural law of cause and effect we often hear of. Effect, we see every day of our lives; cause, we are searching for every day of our lives. Remove the cause and the symptoms or effects are easily taken care of.

The medical profession is lauded to the skies for some of its work in determining and removing the cause of, and practically reducing to a minimum the outbreaks of many of our most virulent diseases that have heretofore affected the human family. But when it comes to the tracing of many of the diseases of the human race, due probably to the consumption of animal food, then they are at sea without the aid of the veterinary profession. The rapidity with which the death rate from the white plague is increasing in the human family, has brought about a united

\*Presented at the Twenty-seventh Annual Meeting of the Illinois State Veterinary Medical Association.

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effort to search for and remove any or all of the possible or probable cause of it. Among the possible or probable causes, we find the contagion to be derived from infected animal food. As to the physical relationship between the bacillus of human and bovine tuberculosis, there is much argument for and against; the consensus of opinions being that there is a direct relationship and that they are transmissible from animal to man, and vice versa, to a greater or less extent. This being true, then we find one of our probable sources of infection in the human family, and especially in the infantile part of it, to be milk from tuberculous cows. The extent of this disease in daily cattle varies in different parts of the country, ranging in percentage from 10 to 25 or more. This variation is in all probability due to their environment. In a personal application of the tuberculin test to about 1,000 head of cattle in the vicinity in which I practice, I found 14.6 per cent. of these cattle showing a positive reaction, and as I am sure the test was applied in the manner as directed by the Chicago Board of Health, I have every reason to believe this number of cattle was tuberculous.

When we consider that about one out of every seven dairy cows suffers from this disease and if only a percentage of these would again void tubercle bacilli in their milk, have we not sufficient cause to compel those who are furnishing milk to the babes of our large cities to do so under certain restrictions and so compel them to use every means known to science to remove as far as possible this one probable source of infection? The method of doing this and the means to be applied is a hard question to solve. There is no doubt but what with the tuberculin test we can discover to what extent the disease exists. The methods to be employed for its eradication furnishes a wide field for discussion. Certain localities can make and pass laws compelling the producers of its milk supply to do so under certain restrictions. If they insist that this milk supply is to come only from non-tuberculous cows, then what is to become of the large volume of milk produced by tuberculous cows? If they insist further that all *milk products* such as butter and cheese shall

come only from the same source, then the volume of discarded milk is still greater. If this milk is discarded on account of its supposed infection by the tubercle bacillus and pasteurization is the method employed to sterilize or make the germ ineffective, do we not by raising it to the required temperature destroy to a large extent the food value of this milk? The producer here must be taken into consideration. It is natural that he will look for a market for his product where these restrictions do not exist, and the result is that unprotected communities are found to consume an overdose of something that, to say the least, is not good for them. That this condition does exist I am sure of.

We tell the farmer to isolate his infected cows; raise calves from them, but not allow the calves to suck the mothers and feed only the boiled product. Advise the majority of farmers to do this and he will consign you to a place kept at a pasteurizing temperature the year round. The discussion of this subject from the standpoint of producer and consumer would end only by the limitation of time.

The method as suggested and laid down by our State Veterinarian, Dr. J. M. Wright, for applying of the tuberculin test, will do more to prevent the traffic in tuberculous cows than any way that has occurred to me yet. The stamping of the letter "T" in the right ear of reacting animals will be like the branding of Cain.

The fact that a milk-producing animal is affected with tuberculosis is not the only condition that makes her milk a source of infection or an impure article of food. The cow may be perfectly healthy, she may be very choice in her articles of diet, she may complete her toilet as far as she can reach herself with her tongue, may try to keep out of as much filth and dirt as she can, and still her lacteal fluid, no matter how rich in butter fats it may be, prove to be a source of infection. We will take for instance a perfectly healthy animal. She is housed with a number of others in a so-called stable that the average man has to lower his head to walk in; overhead to help keep her warm is stored 50 tons of hay; in front of her and divided only by a

wide-cracked board partition is a horse stable; behind her an enormous manure pile separated only from her by a board wall; at either end a board wall with a door banked up several feet with manure; no ventilation except what comes in through the cracks; a floor behind her upon which one has to walk with rubbers or rubber boots to keep his feet dry from the slime that oozes up from between the boards, and yet we expect that perfectly healthy cow to produce good milk. The well from which she drinks is close to the barnyard, acting as a good cesspool for the barnyard drainage; the cans that carry her milk are washed out with the water from this same well; the cans, while standing on the barn floor waiting for the milk to be strained into it, are guarded religiously by a number of cats, waiting for the overflow of milk or foam, and yet we wonder why it is that so much typhoid fever occurs in certain districts in towns and cities where the drinking water supply is good. The conditions described are not exaggerated as I have seen them exactly as described.

We will take another condition of affairs. Scarlet fever has broken out among the members or working force of a dairy farm. The physician in charge probably forbids them to ship their milk from the farm during the existence of the disease. This is done. The affected members become convalescent; they are physically able to do chores, milk cows, etc; the physician's visits cease. Is there any reason, now, why this milk from a perfectly healthy cow, milked by a person who is in the desquamation stage of scarlet fever, should not now be shipped to the city and fed to our children? And yet people wonder where so many of our epidemics of scarlet fever originate. It is merely a case of a "little leaven, leavening the whole lump."

The housewife wonders why her milk sours so quickly even when kept in an icebox from the time she receives it from her milkman. If she could see the millions of fermentative and putrefactive bacteria the milk contains she would not wonder. All these are conditions for which the cow herself is not to blame,

but are the fault of the dairy man himself; he and not the cow is the one to be treated for the existing conditions.

These are only samples of the many things that bring about the contamination of our milk supply and for which a remedy is to be found. You try and reason with the producer and show him how, by a certain amount of effort and some expense, these conditions can to a great extent be remedied, and he will tell you it does not pay, that at the present price of milk he cannot afford it; others, again, are on rented farms, the conditions of their lease calling for no improvements, and they will not make them themselves; others, again, will tell you they have milked cows all their life, their father and grandfathers before them, and that they never heard of such tommyrot until lately and that it is all humbug. They will probably point you out a large family raised on a farm and by its products, and ask you to show them a healthier lot of individuals. They do not seem to understand the difference in environment and that their surroundings of unlimited fresh air and sunshine are antagonistic to disease, while those in the crowded tenements are conducive to it.

What, then, is the remedy for all this? We are told that the great majority of the people of to-day are to a certain extent educated. This being true, then a campaign of education is the natural remedy. This campaign must, to a great extent, be made compulsory. People wallowed in the filth and dirt of their own emanations until sewerage and sanitary closets were made compulsory and to-day they are accepted as a necessity.

The tuberculin test is an example of what must be made compulsory. How many dairymen during the past year would have had the test applied to their herds, had it not been made necessary for them to do so in order to find a market for their milk. Then, again, the manner in which the test was applied by many so-called veterinarians was a farce and the educational part of it not only lost, but it made the members of our profession the laughing stock of the country. There is much good that can be done by the application of the test if it is made by an intelli-

gent person and one who is acquainted with the various phases of the disease, and who can explain in a plain, able manner the benefits to be ultimately derived by the eradication of infected animals from any herd.

Our agricultural papers ought to be a medium for extending a knowledge of existing conditions and a remedy for them. A number of them, I am afraid, are not. They either unknowingly lend a wrong impression or their writings put in such a way as to be misleading and easily misunderstood by the average reader. A farmer told me only a few days ago that he had read in an agricultural paper that it would take fifteen years to get the dairy herds back in as good condition as they were before the test was applied and to rid them of the germs injected into them. All I had to ask him was the average life of a dairy cow. A woman told me she had only to heat the cow's milk to 80 degrees to make it fit for her babe to drink. I had a hard time trying to explain the difference between centigrade and Fahrenheit degrees and doubt very much whether or not she gave me the credit of knowing what I was talking about.

Through the courtesy of Dr. Chas. S. Bacon, of this city, I received a copy of the argument made between the Chicago Medical Society Milk Commission and the dairyman who desired to produce "certified milk." If the requirements of this agreement could be carried out on all dairy farms, there would be no need for papers nor discussion on impure milk. For obvious reasons they are impractical to the ordinary dairyman.

The only solution of the impure milk question that I can see, is to compel the dairyman to produce his milk under certain restrictions and these restrictions must be enforced, otherwise little or no good will be derived.

Much more attention must be paid to sanitation, and ventilation will greatly aid in this and is one of the most important changes that must be made in the ordinary dairy barn. I have found it almost impossible, on entering a dairy barn early in the morning, to breathe, until after the doors had been thrown open for a short time.

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The inspectors sent out by the Board of Health must do better work than they have been doing; too much being taken by them for granted—herds inspected by merely looking at them from afar off and taking someone's word for the rest. There are still a number of dishonest people in the world.

All these changes will take time, and if they are demanded and the rule causing them to be enforced, it will only be a question of time—and let us hope a short time, at that—before the producer himself will see that it is to his own advantage to enforce them and to preach the doctrine to his fellow dairymen.

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THE publication committee of the United States Sanitary Association announce that their publication is ready for distribution at one dollar (\$1) for the first copy and seventy-five cents (75c.) each for additional copies. Address Secretary J. J. Ferguson, Union Stock Yards, Chicago, Ill.

DR. L. R. BAKER, Chief of the B. A. I. inspection force at Kansas City, has received temporary assignment to the field service in Wyoming, the same having been requested because of continued ill health. The REVIEW trusts that a period of roughing it on the plains will aid in overcoming a long-standing catarrhal gastritis, and that the Doctor will be a rejuvenated man when he returns to his post in Kansas City.

THE KANSAS CITY ASSOCIATION OF VETERINARIANS is making a considerable effort to advance the professional interests in that city. This Association has about 25 members and holds meetings once a month. The last meeting was held at the Hotel Kupper where some 30 covers were laid. Among the guests was E. L. Barr, president of the Team Owners' Association, who talked at length upon the necessity of co-operation of the profession and team owners in the suppression of glanders. Through the efforts of these two associations the public watering troughs have been closed and persons desiring to use the public fountains are obliged to supply their own watering bucket. This method of controlling the spread of glanders was tried in Kansas City several years ago with marked diminution of the number of cases of glanders reported after two or three months' trial, and the present closing order will doubtless yield equally good results.

## THE STIFF SICKNESS.

BY DR. JACQUES E. AGHION, VETERINARIAN, STATE DOMAINS, SAKHA, EGYPT.

In September, 1909, I was informed that an alarming disease had broken out on many farms. Bulls were getting sick in great numbers from some unusual disease.

The farms were visited by the writer with the intention of making some study as to the nature of the disease.

Arriving there, I was obliged to admit that the condition was altogether unfamiliar, especially in this part of the country (Lower Egypt). The disease is not by all means fatal, but very alarming, for what I can describe of the symptoms is not always constant. The disease is ushered in by general weakness, stiffness in one or more limbs, loss of appetite, rise of temperature from 39.5 to 39.6 and, in rare cases, to 40° C.; pulsation from 60 to 90 per minute; difficult breathing; inability to stand up or move; redness of the visible mucous membranes, thrifty coat, constipation, followed on the second or the third day by diarrhea.

This disease has only made its appearance for the second time in this part of the country, and I may say in all Egypt in the interval of fourteen years—that is, in 1895 and in 1909—as I was told by my learned chief, Dr. J. B. Piot Bey (Chief Veterinarian, State Domains), who calls the disease *La Fièvre Dengue*.

The disease generally terminates favorably. I have not lost a case in 135 bulls which were affected at that time. Only two cases developed a chronic lameness in one or more limbs for which I tried every possible treatment, but to no avail. These two cases were probably not promptly attended to. Treatment

consisted of placing the animal in a comfortable, well-ventilated stable; complete change of diet, generally green diet. Do not disturb the animal by moving him from one place to another as this may retard recovery. A liberal supply of cold water must be allowed in which may be dissolved moderate doses of mag. sulph. and pot. nit.

Animals generally get better on the third day and will completely recover in two weeks.

THE next annual meeting of the Missouri Veterinary Association will be held at Columbia, Missouri, June 28 and 29. The very active efforts of the secretary, Dr. Luckey, bespeaks a large attendance and a very successful meeting.

#### HORSE SHOWS IN 1910.

Plainfield, N. J., June 2-4.	Cobourg, Ont., August 16-19.
Devon, Pa., May 30-June 1.	Bar Harbor, Me., August 23-25.
Leesburg, Va., June 8-9.	Berryville, Va., August 23-25.
Springfield, Ohio, June 8-10.	Warrenton, Va., August 31-September 1.
Camden, N. J., June 9-11.	Newport, R. I., September 3-6
Galt, Ont., June 9-11.	Rutland, Vt., September 6-9.
Tuxedo, N. Y., June 10-11.	Syracuse, N. Y., September 12-17.
Columbus, Ohio, June 14-16.	Ogdensburg, N. Y., September 19-23.
Upperville, Va., June 15-16.	Poughkeepsie, N. Y., September 28-29.
Culpeper, Va., July 4-5.	Bryn Mawr, Pa., September 28-30.
Bayshore, N. Y., July 21-23.	Brockton, Mass., October 4-7.
Long Branch, N. J., July 24-29.	Louisville, Ky., October 10-15.
Manassas, Va., July 27-28.	Atlanta, Ga., October 18-21.
Orange, Va., August 3-4.	St. Louis, Mo., October 24-29.
Sea Girt, N. J., August 4-6.	New York (National), November 14-19.
Charlottesville, Va., August 9-10.	
Narragansett Pier, R. I., August 12.	
White Sulphur Springs, W. Va., August 12-13.	
Front Royal, Va., August 16-17.	

## REPORTS OF CASES.

### PYÆMIC ARTHRITIS AND THE USE OF NUCLEIN SOLUTION IN ITS TREATMENT.\*

By JOSEPH H. JEFFERSON, V.S., Chicago, Ohio.

When on the 3d of last month I received a letter from our worthy secretary, Dr. Myers, asking me to prepare a paper of my own selection for this meeting, I was for a few moments undecided what to say in reply. My first thought was, as a young member, my ability to prepare an article appropriate for this occasion. My second thought was an appropriate subject to write on. Then came the third thought, the fact of which appealed to me more forcibly than both the others—that in order to maintain and perpetuate the par excellence of the Ohio State Veterinary Medical Association in all of its grand features, we younger members must take an active part and let a few of the older members sit back and enjoy the fruits of their labors performed in the earlier days. With this last thought in mind I took my pen and wrote Dr. Myers that I would prepare a paper to the best of my ability. After a brief synopsis of the etiology of this form of arthritis, I am going to relate to you in my own simple way, and give you in detail my own clinical observations of the case in question; for I have learned from experience that we can find nothing more beautiful for the average busy practitioner than a bouquet formed by picking a few wild flowers of practical experience which we can find growing on either side of the well-trod path of technical formalities.

Equally numerous in the past have been author's theories and discussions of this form of arthritis. But to-day we are in possession of the well-confirmed fact that it is due to infection through the umbilicus (*Streptococcus vulgaris*), which occurs at

\* Read before the Ohio State Veterinary Medical Association, Jan. 18, 1910.

birth through the fresh navel coming in contact with infected bedding. The germ gains entrance and in the young foal finds a suitable media, reproduces, throws off its toxins, metastasis takes place, and hence the symptoms.

There is a chain of symptoms in connection with this disease which varies somewhat in appearance and severity, the severity depending upon the virulence of the infection, together with the opsonic power of the patient. The usual initiatory symptoms are elevation of temperature and little or no desire to nurse. The little subject becomes rapidly emaciated; there is a fetid diarrhoea in the majority of cases; the joints become swollen and very painful, and the patient resumes the recumbent position. Pervious urachus often coexists in this form of arthritis and it is generally believed that all cases of neglected pervious urachus lead to pyæmic arthritis. While I have seen both conditions independent, I have seen them associated together. In mild cases the initial lesions may be overlooked. The first symptom to attract attention is lameness and swelling of the joints, which simulate at first traumatism, and the mare receives a benediction from the owner in behalf of her carelessness; but on the next day when one of the other limbs is swollen likewise, the veterinarian is called and an examination of the navel, which is swollen and painful, reveals the true nature of the case.

**PROGNOSIS.**—While the mortality of this disease has been greatly reduced by the steady progress of veterinary hygiene, yet the mortality is very great, and those few that survive retain their large joints and regain health very slowly.

**TREATMENT.**—Owing to the fact that this disease is contracted by infection through the navel, the treatment is limited to its prevention by proper disinfection and antiseptically dressing the cord at birth. While prevention is very important in reducing the mortality of this disease, yet equally, or more important, are the curative agents to be employed when the disease is once established. Owing to the fact that all cases of pervious urachus render that area suitable for infection, all such cases should (in my opinion) be washed with a solution of bichloride, injected with the tincture of iodine and ligated with a strong ligature. Prior to the more recent therapeutical research, as stated above, the treatment of this disease was very unsatisfactory. Among the drugs most frequently resorted to as giving the most apparent results I might mention potassium iodide, arsenic, quinine, sodium hyposulphate, and salicylic acid;

with surgical and antiseptic attention to the various parts where suppuration occurs. While dealing with the treatment of this disease I feel that I would be doing my paper a great injustice if I were to omit the therapeutical experiences imparted to me by some of our prominent members, *i. e.*, the use of echinacea, which has given excellent results in the hands of several of the members. As there is no toxic effect from the use of echinacea, it is best given in large doses, from 20 to 60 drops every one to three hours, according to the severity of the case. Before passing on to give you in detail the particular case in question, let me ask you to go back with me for a moment and recall the many bad cases we have all had to treat and the great mortality which has attended our treatment; then we will be better able to appreciate the case I am about to describe.

The case in question was a draught colt foaled September 2. The owner noticed the colt lame on September 6 and, thinking he had received an injury, paid little attention to it. But on the next day, September 7, found him lame on one of the other legs, with pastern badly swollen. Thinking it rather strange, that evening he related the circumstance to a neighbor. The neighbor having had two similar cases, told the owner that the colt would die regardless of all he could do for him.

On the morning of the 8th he found one of the other legs badly swollen and the colt unable to rise without help, and also discovered that the urine was escaping through the navel. He then went to the 'phone to call my assistance. I, having left the night previous to attend the meeting at Chicago, the colt was left without treatment until September 11, when I returned.

Early on the morning of September 11 the owner called me up by 'phone and described the case to me, and I fully agreed with the prognosis of his neighbor, telling him the only hope I had of the case was a new treatment which I would like to try on the colt, and offering him a fair proposition, he told me to come out and treat the colt. On my arrival I found the colt down, all four legs swollen, urine escaping through the urachus, a foetid diarrhoea with severe colicky pains, temperature  $105\frac{1}{2}$ . I at once gave two ounces of castor oil, to which I added an anodine mixture. I then gave 10 c. c. nuclein sol. and 10 c. c. normal salt sol. hypodermically; left three one-dram powders of hyposulphite of soda to be given during the day; also left oral nuclein sol. to be given in dram doses every two hours, with directions to milk the mare and feed the colt, which the owner had been

doing. Returned late that evening, found the temperature 104, colicky pains ceased, and diarrhoea much improved; repeated my hypodermic nuclein sol. and continued my administration of the oral solution.

The following morning, September 12, found patient much improved, temperature 103 $\frac{1}{2}$ , swelling of the limbs much reduced, and with a little help would stand and nurse. Repeated my nuclein sol. and left same to be given orally. Returned that evening and found patient still improving, temperature 103, and with a little help had been up and nursed several times during the day. The following morning, September 13, found my patient still improving, temperature 102. I repeated my nuclein sol. and returned in the evening to find my patient able to get up and nurse without any assistance. I returned about noon of the next day, September 14, and found my patient walking around; swelling nearly all gone from limbs and navel. I again repeated my dose of nuclein solution hypodermically, leaving more of the oral solution to be given every three hours. I returned again September 16 and found my patient in good shape. I gave another dose of nuclein solution and left a four-ounce bottle of the oral solution with directions to give one dram every four hours daily. The colt continued to do finely, and I wish to say is as good a colt of his kind as there is in the country. And in closing I wish to say as I have said before, when we take into consideration the great mortality which has attended our treatment in this form of arthritis, I feel highly favorable towards nuclein solution in the treatment of pyæmic arthritis.

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## INFLUENZA WITH RHEUMATIC COMPLICATIONS.\*

By Dr. H. E. MYERS, Fostoria, Ohio.

In reporting this case, I want to thank Dr. Longfellow for his kindness in supplying some of the facts concerning it.

**HISTORY.**—Roan mare, five years old, which for about a week previous had been more or less stupid. September 9 the symptoms were as follows: Temperature 105 $\frac{1}{2}$ ; pulse 70 full

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\* Presented at the January meeting of the Ohio State Veterinary Medical Association.

and bounding; respiration short, quick and labored; general appearance very dejected; all visible mucous membrane congested; one eye badly swollen and mattering while the other in sympathy was watering and looked weak; nostrils extended and had a very dirty, smeary discharge which adhered rather closely. A tumefied swelling between the nostrils, which enlarged the whole nose and labia. The appetite remained good; on moving her she would stagger from one side to the other and was quite lame in the hind limb, which was held from the ground frequently; no enlargement could be noticed in either of the hind limbs, while the front ones were swollen at the knees but no lameness.

**TREATMENT.**—Give heart sedative and left febrifuge and diuretics. In two days she was reported much better; this continued for ten days, during which time she was given fresh air, sunshine and exercise.

About two weeks after first visit was called again, the owner saying that she was showing similar symptoms. Found her much the same with a tucked-up appearance of the flanks and was now showing the "rheumatic complications." Was in great pain, continually shifting from one limb to the other. Temperature  $103\frac{1}{2}$ ; pulse soft but rapid.

**TREATMENT.**—Hot fomentations to the joints which were swollen and an aloetic pill. Fl. ext. colchicum alternated with quinine and sodium salicylate. Ounce doses nuclein were given daily.

**RESULTS.**—An improved condition and thought she would get along all right. Shortly after, I was called in consultation with Dr. Longfellow and we found her much the same as before, with symptoms of purpura hemorrhagica, viz.: Abrupt swelling of the nose and both front limbs above the knees; very weak and had to be assisted in rising; temperature  $103$ ; pulse 50.

**TREATMENT.**—Ounce doses of nuclein daily, also tr. iron, pot. dichromate and pot. nit. alternated with fl. ext. colchicum, iron and quinine.

**RESULTS.**—Another improvement after three days; owing to the great weakness she was put in slings during the day and allowed to lie down at night.

A strange feature of the case was that when warm the animal would get worse, and if it turned cold she would improve. After a few days a part of the last treatment was substituted with salol, belladonna and quinine; while it took a long time, the mare made a good recovery.

### “STRANGLES.”

This animal, a gray mare twelve years old, had been at work and suddenly refused food. A slight discharge from the nostril, swelling of the submaxillary glands which continued to enlarge until the whole head was badly swollen, and an edematous swelling of the hind limbs, were the conditions found when called on the eighth day.

On further examination the temperature was found to be 105; pulse 60; the swelling was hot and painful to the touch; animal very weak.

**TREATMENT.**—Abscess was opened from which flowed several quarts of rich, creamy pus; cleaned cavity with peroxide of hydrogen. The medicinal treatment was the same as in any ordinary case, viz.: Fresh air; clean quarters; hot mashes, etc. Flux nux and colchicum was also used.

The mare seemed to be doing nicely, when about a week later I was again called. She was found very weak; temperature 103½; pulse 50; swelling of the head greatly reduced; suppuration had nearly subsided at that point.

The peculiarity of the case was a swelling which extended from the upper part of the scapula backward along the spinal column through the sacral vertebra; this swelling was only on the left side and at least eight inches high.

**TREATMENT, INTERNAL.**—Calx sulphate, pulv. gentian and quinine sulphate alternated with flux nux and colchicum.

**TREATMENT, EXTERNAL.**—Stimulating liniment to the swollen parts. The third day I returned; three abscesses had formed, one above the cartilage of the prolongation, one about ten inches posterior, and the third in the sacral region; all were opened and a large amount of pus escaped. Wounds healed rapidly by thorough cleansing with  $H_2O_2$ . With care and attention recovery was complete.

Something to think about: Why was the swelling so distinctly on the one side?

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### AMPUTATION OF THE TONGUE.

By E. A. WESTON, G. M. V. C., Launceston, Australia.

The subject was an aged bay mare used to run in double harness in a cab. She had had a nasty sore under the tongue,

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and her owner and a quack were dressing it when she pulled away and tore her tongue nearly out of her mouth. After the quack had put some slits in it to "let the inflammation out," her owner took her home, and from there she was sent to the knackers to be destroyed. The fellow in charge brought her up to my hospital late one evening to see if I could do anything with the case. It was springtime, and I had been going night and day for some time previously; so, time being precious and the mare of little value, I decided to perform a radical operation right away. The instruments were got ready, the mare thrown in one of the loose boxes, and my wife (who always acts as anaesthetist) administered chloroform. When the mare was well under, I put the gag in her mouth, applied a double half-hitch well up the tongue, and amputated  $5\frac{1}{2}$  inches of it by the light of an electric lamp. Next morning she went home and the following day I removed the ligature, but unfortunately the piece of tongue included in it sloughed away, leaving the stump shorter than ever. After-treatment consisted in rinsing and syringing the mouth out with carbolic and lysol solutions. For about ten days the mare lived on liquid nourishment, which she drank herself. In the paddock during the day she would feed continuously, but she merely cropped the grass, half chewed it and spat it out. After the tenth day the wounds began to heal nicely, and she could get her food back and swallow it. From this out she did well and put on flesh, although she dropped a little food out of her mouth when feeding out of the manger. She has since been sold and is now at work some thirty miles from here. From my observations of this case, I would never hesitate to perform amputation of the tongue again.

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#### TETANUS AS A SEQUEL TO OPERATION FOR UMBILICAL HERNIA BY LIGATURE.

By E. A. WESTON, G. M. V. C., Launceston, Australia.

As this is a sequel which none of the writers on veterinary surgery whom I have read (Williams, Mohler, Cadiot and Dollar) mention, the following cases are worth placing on record.

No. 1. This was a bay draft mare with a very large hernia.

After administering chloroform I applied a ligature as directed and subsequently applied a second one to hasten sloughing. The slough was washed and powdered with Calvert's carbolic powder daily and just when it was on the point of dropping off the mare went home. She had fed and done well up to this time and a couple of days after she went home the slough dropped off; the raw surface left was dressed antiseptically. Notwithstanding this she developed tetanus. I threw her and found a suppurating canal extending some distance under the skin. This was syringed out with 10 per cent. lysol solution and the surface of the wound dressed with the pure drug. Treatment consisted in cannabis Indica and chloral hydrate per rectum, but after about four weeks death ensued. This occurred several years ago, when I was young and inexperienced, and it caused me much mental perturbation.

This spring I operated on three cases about the same time. No. 1 was a bay draft filly. She was thrown and chloroformed and the hair clipped. The parts were then washed with lysol solution and a multiple ligation carried out, the ligatures being soaked in 10 per cent. lysol. Instructions were left to syringe round the base of the slough with carbolic solution daily as soon as the ligature began to cut in. After six days I called again and applied a fresh ligature and from this out the wound was carefully syringed according to directions every day. In about a fortnight from date of operation the slough dropped off and five days later the manager rang up to say that he was afraid the filly was getting lockjaw. I drove out and found his surmise correct, although the case was a mild one. To my great relief this filly recovered.

No. 2 was a foal with pervious and inflamed urachus, to which, after proper treatment and washing with lysol, a ligature was applied. The owners received instructions to syringe daily with an antiseptic and (the case being 30 miles away) to cut the slough off after three or four days. Being intelligent, educated men they carried out my instructions well, but, notwithstanding, the foal developed tetanus and died. In future when I operate by ligation the patient will receive a dose of anti-tetanic serum. Under ordinary farm conditions the statement about the wound healing aseptically after being painted with iodoform collodion, or powdered with tannic acid and iodoform, is all nonsense.

MOWEAQUA, ILLINOIS, May 4, 1910.

AMERICAN VETERINARY REVIEW, New York:

GENTLEMEN—The enclosed photo of a monstrosity was delivered by me from a four-year-old draft mare on April 24, 1910. Lower jaw was attached to breast bone, permanent open-



ing in median line extending from distal end of sternum to navel. Bowels laying without abdominal cavity. Mare due to foal May 7, 1910; foal dead apparently 36 or 48 hours.

Yours truly,

BENTLEY F. HUDSON, M.D.V.

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#### INVERSION OF THE UTERUS IN THE MARE.

By E. A. WESTON, G. M. V. C.

The subject was a young bay draft mare, with her first foal. I had been in the district the previous night attending another mare, and the train was just stopping at the siding for me, when a man came full gallop to the station. He explained that his mare had foaled a few hours ago, that the cleanings had been hanging from her; that having heard that they should not be left he had pulled on them, and that as a result all her "bear-

ings" had come down. I jumped into the trap and was soon on the field of action, where I found the mare leaning against the stable wall and trembling violently. Behind her hung a completely inverted uterus bleeding profusely. While they ran for hot water, towels and a sheet, I stripped, got out my ropes, and chloroform, and had the mare led out onto a clean patch of grass. Here she was thrown with her head down hill, the uterus washed, the remaining placenta removed, and an attempt made to replace it. This was found to be impossible owing to the mare straining, so a chaff bag was put over her head, chloroform administered, and the uterus returned to its place after a bit of manoeuvering. Next four towels soaked in hot lysol solution were stuffed into it and a bottle—neck outwards—fixed in the vagina, which was finally closed by peg-stitching the vulva, leather being used for the pegs. The mare was now allowed to come around and given half a pint of whiskey to pick her up. During the night she had whiskey, ergot and quinine every three hours, and I left a prescription for chloral hydrate and chlorodyne to be given instead, should she start straining. The following morning I removed the stitches, bottle and towels and syringed the womb out. The whiskey was continued at longer intervals and the mare started to feed. Four days after the operation the mare, accompanied by her foal, was walked into my hospital, a distance of 18 miles, and seven days later she went home again, none the worse for the trouble she had been through.

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#### B. A. I. VETERINARY INSPECTORS ASSOCIATION.

The regular monthly meeting was held May 13, at 8 p. m., being called to order by the president Dr. S. E. Bennett. The meeting was well attended and two new members were admitted to active membership. The chief events of interest for the evening were: (a) A talk by Dr. L. E. Day, Chief of the Pathological Laboratory, on recent work done by the laboratory on milk inspection. (b) The presentation of a paper by Dr. H. A. Smith on "Parturient Paresis." The paper substantiated the theory that the disease in question is caused by a cerebral anemia; and recounted a case, among others, in which Dr. A. J. Dammon removed the cranial cap of a patient so affected and actually observed the resumption of circulation in the brain after he had inflated the udder. Meeting adjourned at 10 p. m.

H. A. SMITH, Secretary-Treasurer.

## CORRESPONDENCE.

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ISTHMIAN CANAL COMMISSION,  
Ancon Hospital,  
Canal Zone, Isthmus of Panama.

BOARD OF HEALTH LABORATORY,  
ANCON, C. Z., April 14, 1910.

*Editors of the AMERICAN VETERINARY REVIEW:*

Veterinarians may be interested in knowing that a pathogenic trypanosome has been found in the blood of an American gelding and in a number of American mules in the Commission corral here at Ancon.

The trypanosome *T. hippius*, n. sp., is being found in the blood of animals suffering from a disease called by the veterinarians "Swamp Fever," which corresponds clinically with the recent descriptions of "Swamp Fever" published in the United States. Symptoms noted in the animals here are: Anemia, irregular pyrexia, emaciation, conjunctival ecchymoses, unimpaired appetite, weakness of loins and posterior extremities (terminal), and rarely edema of dependent parts, such as belly, sheath or legs. All of the cases die in from two weeks to three or four months after the appearance of signs and symptoms.

The autopsy picture in all sub-acute and chronic cases permitted to die of the disease is uniformly characteristic and may be expressed in the following anatomical diagnosis:

Anemia.

Emaciation.

Conjunctival ecchymoses.

Epicardial and endocardial ecchymoses.

Acute hemorrhagic nephritis with cortical ecchymoses.

Splenic capsular ecchymoses.

Peritoneal ecchymoses.

Hemorrhagic necrosis of renal lymph nodes.

An average blood picture when the disease is well advanced is:

Red blood cells, 2,500,000.

Leukocytes, 12,500.

Polymorphonuclear leukocytes, 26 per cent.

Large and small mononuclears, 73 per cent.

Myelocytes, 1 per cent.

In some cases there is an eosinophilia due to associated intestinal parasites.

The disease is seen to resemble the accounts of "Swamp Fever" very closely, and also those of trypanosomal diseases of equines generally, particularly nagana.

The trypanosome as seen in the fresh blood appears and disappears with irregularity, appearing in numbers from one to a cover slip preparation, to five or ten to a field (8 ocular, 8mm. objective, Zeiss), for two or three days; and then disappearing for four, five or more days; generally present during a febrile paroxysm. It may, however, be impossible to demonstrate them in cover slips during such a period. The trypanosome is not as long as the rat trypanosome, *T. lewisi*, and its activity varies. Sometimes its motion is very rapid, at other times slow and jerky. The undulating membrane is fairly well developed, and can frequently be seen in action when the motion of the trypanosome is feeble. It does not cause the commotion among red blood corpuscles that *T. lewisi* does, probably on account of its shorter length. In stained preparations its length varies from 12 to 28 mu., its breadth 2 to 4 mu. Most specimens are 16 to 18 mu. in length. The trophonucleus is centrally placed and the kineto nucleus, placed quite posteriorly, is of fair size, and always visible, .5 to 1 mu. in diameter. The posterior end is usually blunt, not elongated, as in *T. lewisi*. There are at least two types, a relatively long form, and the commoner stumpy form.

	Dimensions of Longer Form.	Dimensions of Stumpy Form.
Length .....	28 mu.	16 to 18 mu. (a few 12 to 14 mu.)
Breadth .....	2. mu. (some 3 to 4 mu.)	2 to 4 mu.
Distance from kineto nucleus to posterior tip .....	1.75 mu.	Practically at tip.
Distance from posterior tip to middle of trypo-nucleus ...	10 mu.	7.5 mu.

The trypanosomes are practically always very rich in granules. Sometimes these are distributed discretely or arranged in lines; some are in the anterior half, and some in the posterior half. They are rather coarse and 17 or 18 may be counted. The lateral margins of the trypanosome are usually more deeply stained than the middle portion. The longer forms have a longer flagellum and are freer from granules. The kineto nucleus is almost always on the opposite margin from the undulating membrane, so that the chromatin filament usually crosses the posterior tip. A few specimens presented an achromatic line parallel with the chromatin filament and of equal breadth for a distance of about 4 mu. as it crossed the body. When inoculated into *Mus rattus*, already infected with *T. lewisi*, the contrasts between the two trypanosomes are well shown.

The trypanosome appears to resemble *T. dimorphon* more closely than any other and its identity with *T. brucei*, *T. evansi*, *T. equinum*, and *T. equiperdum* can be ruled out on morphological, clinical and pathological grounds.

Horses, mules, calf, dog, hog, goat, cats, rabbits, guinea pigs, agouti, monkeys, genus *Cebus*, rats and mice have been inoculated. Up to the present horses, mules, dogs, rabbits, agouti, cats, guinea pigs, rats, mice and monkeys have become infected. Mules, monkeys and guinea pigs have died.

A definite trypanosomal disease, then, is here established. It will be of some interest now to consider the following facts:

The disease had not been observed here since the American occupation, May, 1904. I have failed to demonstrate trypano-

somes in native horses, though there has been one suspicious case with lymphocytosis.

It appeared among a lot of mules and horses coming via New Orleans from the United States in April, 1909. The first cases and the first deaths appeared among this lot of animals. After a period of about ten months it was detected in animals that had been on the Isthmus from two to four years. When the disease first appeared it was called "Swamp Fever" by the veterinarians, one of whom had seen and treated cases in the Western states.

Occasional blood examinations failing to reveal trypanosomes, believing also that we were dealing with a filterable virus, and to determine the infectiousness of a filtrate, blood from three fatal cases in mules was passed through a porcelain filter and inoculated into one mule, No. 359, and two horses, Nos. 121 and 47. These were the only animals available for inoculation purposes. They had been condemned on account of viciousness or injury. The first two must from our present knowledge be eliminated from the experiment because they were in the lot from the States in which so many cases of "Swamp Fever" developed. Mule No. 359 died a few weeks after inoculation with the filtrate of typical "Swamp Fever." Horse No. 121 has become emaciated, while No. 47 has remained perfectly normal for six months. Horse No. 47 should have developed "Swamp Fever" if the virus is a filter passer. But on account of the long period of incubation reported in some cases, he remains under observation.

Trypanosomes were found in Horse No. 121 several weeks after the inoculation of the filtrate. Routine temperatures and blood examinations of animals in the corral have disclosed 13 cases of trypanosomiasis among sick mules, three of which have died with typical symptoms and all the pathological features of "Swamp Fever." Guinea pigs inoculated with their blood at autopsy have developed trypanosomiasis after seven to nine days. One guinea pig died on the twenty-seventh day.

As the clinical and autopsy picture of these three cases is identical with all the foregoing cases, I conclude that what has been called "Swamp Fever" here is equine trypanosomiasis. Now, as it was previously unknown in the corral, and apparently introduced from the States, the thought is at once suggested that "Swamp Fever" of the Western United States is a trypanosomal disease in which trypanosomes are rare in the peripheral

blood (as in Dourine), but which may luxuriate in this tropical climate. It would seem wise to look into the matter of the etiology of "Swamp Fever" in the light of this knowledge, and to make cultivation and inoculation experiments with susceptible animals, guinea pigs and monkeys in perhaps the elevated temperature of a thermostat.

If it should develop that "Swamp Fever" is not a trypanosomal disease, then we have here a new trypanosomal disease of equines that at the present writing appears to be most fatal among mules. That horses are probably not very susceptible and when infected the disease lasts a considerable period of time.

A detailed study of this epidemic is being made by the writer, which will include observations on the epidemiology, symptomatology, pathology, method of transmission by bats, flies, biting flies, ticks, etc.

Respectfully,

SAMUEL T. DARLING, M.D.,

Chief of Laboratory.

OAKLAND, CAL., May 12, 1910.

*Editors of the AMERICAN VETERINARY REVIEW:*

GENTLEMEN—At the risk of being classed as a bunch of alarmists the local committee of arrangements desires to again issue, with your kind permission, a warning or two for the benefit of those who propose attending the meeting of the American Veterinary Medical Association in San Francisco next September.

Owing to the fact that three conventions will be pulled off during the same week of our meeting it will mean, of course, that San Francisco will have to take care of a great many visitors who will crowd its resources, as far as hotels are concerned, to the high-water mark.

It is obviously necessary, therefore, for those who contemplate being in San Francisco during that week, to make reservations immediately, and in making reservations to not only state date of arrival but also date of departure.

When the annual convention of the American Veterinary Medical Association, the Hoo Hoos (Lumbermen's Association) and the Native Sons and Daughters of the Golden West decide

to sojourn in one city during the same week, in the language of the street poet, there will be something doing.

Another warning the committee desires to submit is, that those who journey to the Coast next September must realize that in the climate of San Francisco and the extreme Coast region they will not experience the same caloric conditions that they leave in the East, the South and the Middle West. They should not deceive themselves with the idea that they are coming to a tropical or semi-tropical country and all that it portends. The mean temperature of the Bay region for the year is about 55 degrees. The highest temperature being 89 degrees and the lowest about 35 degrees.

California is a great big sanitarium. Its varieties of climate are unparalleled by any other state or country in the world.

The climate of the Coast is invigorating, stimulating and delightful. It is neither too warm nor too cold. Those who live by the sweat of their brows know no fatigue nor discomfort except from physical exhaustion or the result of overtaxed muscles. While those who live by the exercise of their gray matter yield only to failure on the part of their mental powers.

In the valleys of the interior during midsummer the temperature is much higher, and there is no doubt discomfort at times for those who labor in the harvest fields, the fruit orchards, the vineyard and even in the offices and stores. But the dryness of the atmosphere robs the thermometer of much of its terrors. The temperature experienced in the valleys is less irksome at 100 to 110 degrees than in regions of greater humidity of the atmosphere where the mercury reaches 85 to 95 degrees. Sun-stroke is a condition that is practically unknown.

It is invariably the experience of persons coming into almost any part of the state that they take on avordupois, increase in strength, are less troubled with nervous affections, sleep well and acquire a good appetite and improve in health if ailing from any cause. In the Bay region the afternoons and evenings frequently become quite cool due to the advent of a chilly though balmy breeze that comes directly off the Pacific Ocean.

On this account it will perhaps show wisdom and discretion on the part of our visitors if they will put an overcoat or extra wrap in their suitcases, more especially if boat riding or evening outing is indulged in.

On account of the invariably cool nights those who propose engaging in doings nocturnal, automobile joy rides, etc., will

necessarily have to provide themselves with warmer raiment, but this last suggestion, we opine, is entirely adventitious as far as visiting veterinarians are concerned.

Respectfully,

R. A. ARCHIBALD,  
Chairman, Entertainment Committee.

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CHICAGO, May 4, 1910.

*Editors AMERICAN VETERINARY REVIEW:*

At a recent meeting of the Chicago veterinarians who have signified their intentions to attend the San Francisco meeting, the special car or special train proposed by Dr. W. Horace Hoskins, was discussed at length. It was decided to request all those who look favorably upon the project to write the undersigned at once in order that the arrangements may be made early.

The one difficulty foreseen is that of deciding upon a day of departure that will be agreeable to all. It was predicted that while some may desire to go post-haste to the meeting, others may prefer a week or so of sight-seeing en route. It is very plain that those belonging to college faculties will have no time for sight-seeing on the return journey, since they will barely have time to reach home for their opening exercises.

For these reasons two days of departure are herewith proposed: August 24 and August 31. Those inquiring will therefore signify their preference between these two days. Let us hope we may be able to send out two special cars, or, better still, two special trains, one on each of these dates.

The route proposed for the out-going journey is from Chicago to St. Paul, to Seattle, to San Francisco.

Very respectfully yours,

L. A. MERILLAT.

1827 Wabash Avenue.

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CLEVELAND, O., May 10, 1910.

*Editors AMERICAN VETERINARY REVIEW, NEW YORK:*

The trip to California is a pleasure looked forward to by all of us. And now that the opportunity presents itself, we owe

it to ourselves to arrange said trip so as to see the most we can for our money.

To go by oneself and not having been over the trip, we would not expect to take advantage of our time, but would waste much of it, and at an increased cost to ourselves. So, to have a man of experience, from having taken said trip several times, prepare and submit an itinerary, say by circular or through the REVIEW, as to cost of trip, including side trips of interest at points we all want to see on the trip, would be a benefit to us all; and he could, and would no doubt, so arrange it as to economize on time, at the same time have us as near as possible, many points by day, rather than by night. The railroad fare and sleeper is only a minor part of cost, and I think by all means, have excursion special train, Pullman and diner, for trip; so as to be able to park same at points of interest if so disposed; and arrangements of the time and entertainment at meeting can be so fitted into itinerary as to go nicely, which will bring cost of trip within reach of many desirous of taking it. When, if without such arrangement, with the rates already mentioned, to see the many places of interest, the extra cost and dinner service will make it prohibitive to many. I hope arrangements along these lines may be worked out in the time we have to do so.

Respectfully,

A. S. COOLEY.

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SPOKANE, WASH., May 9, 1910.

*Editors AMERICAN VETERINARY REVIEW,  
New York City, N. Y.:*

I am in receipt of a letter under date of May 5 from Dr. Archibald in which he quotes a part of a communication from you relative to the special train from Chicago to San Francisco via St. Paul, Spokane, Seattle, Tacoma and Portland.

I am enclosing a copy of a letter from Dr. Lyman by which you will see that Dr. Lyman and I are working in hearty accord for the special veterinary train from Chicago to San Francisco via the Burlington to St. Paul, Northern Pacific to Portland and Southern Pacific to San Francisco. I am also enclosing the proposed itinerary covering this train which shows that the members of the party of this train will be guests of the Veterinary

Pacific Northwest during their trip through the Northwest and especially the guests of the Chamber of Commerce of Spokane from 12 o'clock at noon to 8 p. m. of September 2, and guests of the Seattle Chamber of Commerce from 10 a. m. to 8 p. m. September 3. We shall try to make these two short stops as pleasant as possible.

Very truly yours,

S. B. NELSON.

NORTHERN PACIFIC RAILWAY COMPANY.  
Traffic Department.

701 Sprague Avenue, cor. Wall Street,

SPOKANE, WASH., May 6, 1910.

DR. S. B. NELSON,

225 Indiana Avenue,

Spokane, Wash.:

DEAR SIR—In compliance with your personal request beg to submit herewith proposed itinerary covering American Veterinary Special, to leave Chicago at 12.01 a. m., August 31, en route to San Francisco:

Leave Chicago .....	12.01 a. m.	August	31
Arrive St. Paul.....	1.00 p. m.	"	31
Leave St. Paul.....	1.30 p. m.	"	31
Arrive Spokane .....	12.00 m.	September	2
Leave Spokane .....	8.00 p. m.	"	2
Arrive Seattle .....	10.00 a. m.	"	3
Leave Seattle .....	8.00 p. m.	"	3
Arrive Portland .....	2.30 a. m.	"	4
Leave Portland .....	3.00 a. m.	"	4
Arrive San Francisco.	10.00 a. m.	"	5

I sincerely trust you will be able to secure a sufficient number of delegates to justify the operation of this train, and if further assistance is desired do not hesitate to command me.

Yours truly,

W. H. UDE,

City Passenger Agent.

## OBITUARY.

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### ELDON L. LOBLEIN, D.V.S.

Dr. Eldon L. Loblein died at his home in New Brunswick, N. J., March 24, 1910, at the age of 49 years. Dr. Loblein was a native of Bermuda, W. I., where he lived until he came to New York City to pursue the study of veterinary medicine. He graduated from the American Veterinary College in 1884 and entered into general practice in New Brunswick, where his ability as a practitioner, honorable methods and genial manner soon surrounded him with a large practice and endeared him to all whose privilege it was to have known him. His city expressed its appreciation of his honorable citizenship by making him a school commissioner. In the veterinary profession he stood for everything that aimed at its elevation and was an active member both in his state organization and the American Veterinary Medical Association, having been president of the former in 1905 and 1906.

His funeral was attended by a delegation of veterinarians from New Jersey, New York and Pennsylvania, also by the Elks and Odd Fellows. Dr. Loblein is survived by a son, who is a third-year student at the University of Pennsylvania Veterinary School.

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### EARL W. SUNDERLIN, V.S.

Dr. Earl W. Sunderlin died at his home in Auburn, N. Y., May 14, from a complication of diseases. The doctor had been ill for a year, but was not taken seriously until a week prior to his death, when he took to his bed, from which he never rose. Dr. Sunderlin graduated from the Ontario Veterinary College something less than twenty years ago and had been practising in Auburn fifteen years at the time of his death. He enjoyed a very lucrative practice and had a host of friends. He is survived by his parents, a widow and a brother.

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## ABSTRACTS FROM EXCHANGES.

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### ENGLISH REVIEW.

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By Prof. A. LIAUTARD, M.D., V.M.

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TRAUMATIC PERDICARDITIS [*Robert Barker, M. R. C. V. S.*].—Practicing in mining districts and around towns the writer has seen many cases. At the onset the symptoms are suggestive of stoppage of the bowels; a short painful grunt, the animal very dull and having no appetite. There is a specific symptom, viz., the animal stands with its head down, muzzle near the ground. When this symptom is present Barker never hesitates to diagnose a foreign body in the heart. He recalls two cases: 1. A fat bullock which was to be sold and killed. He would lie down, extend the head, draw up his feet alternately, grind his teeth. When he was slaughtered a piece of wire was found penetrating the heart. This is the only case when an animal having acute pain, was laying about most of the time. They generally stand up. 2. Cow reported having stoppage of the bowels. With the ordinary symptoms she stood up with head down. At post mortem, a piece of wire was found entering the pericardium through a hole from the stomach and dia-phragm.—(*Veter News.*)

PECULIAR CASE OF TUBERCULOSIS IN A HORSE [*Reginald H. Smythe, M. R. C. V. S.*].—Eleven-year old gelding had been doing badly and slowly losing appetite and flesh. He is dull, emaciated and hidebound. Temperature is 102 F. His teeth are very irregular and sharp. Perhaps the trouble was due to indigestion. The teeth are fixed and suitable remedies prescribed, and for a short time he seems to improve. He is again taken ill with a temperature of 103 F., and constipation. He is placed in closer observation and it is discovered that he

has a very dry cough and shows tenderness under palpation of the right lumbar region. Treated on general tonic principles and not improving after a run out to grass, he is destroyed. At the autopsy several growths of various sizes were found attached to the mesentery and some smaller ones on the diaphragm and peritoneum. On section, these growths showed caseation and every appearance of enlarged lymphatic glands. Unfortunately tuberculin test had not been employed.—(*Veter. News.*)

RUSTY NAIL IN A SEAL'S FIN [*J. Donaldson Pottie, M. R. C. V. S.*].—A performing seal was lame on one of its fins. After a great deal of trouble to control it, the cause of the lameness was found to be a rusty box nail fixed in the fin. This was extracted with forceps. The part was dressed with hydroxyl and hot water and in three days the animal was able to resume its performing duties. The treatment by hydroxyl seems to have been most beneficial and is highly recommended by the author in the dressing of wounds of horses where blood poisoning and tetanus may occur.—(*Veter. News.*)

FRACTURES OF THE HUMERUS [*D. Silvestro Rabagliati*].—Referring to reading remarks on this subject the author writes to say that he has often seen similar injuries occurring in Cairo with loaded or unloaded camels, working on hard and slippery roads. He has also seen one case of fractured femur, but humerus seem to be the bone most commonly fractured. The treatment followed by the natives for this or indeed for any injury of the leg of camels, is a sort of modification of Bier's treatment, unless they resort to firing. They tie a light cord around the leg just below the elbow, not enough tightened to cut off the circulation, but sufficiently to cause considerable œdema and swelling. This treatment is as a rule carried out irrespective of the injury being above or below the cord; which is left on several days. Recovery is often effected. The writer has not tried treatment of such cases, as generally the owner has preferred to have the animal destroyed to save expense. He is then killed for food.—(*Veter. Record.*)

UNUSUAL INJURY TO THE GASTROCNEMIUS MUSCLE [*C. Herbert Sheather*].—Driven wheeler in a green team, this horse slipped and fell under the pole. After getting up he walked with difficulty half a mile to reach home. Seen in the afternoon

he is slightly lame on the near hind leg while trotting. He has a diffused swelling below the stifle joint. The next day he is unable to carry weight on the injured leg, the hock is down to a level lower than the right side, the fetlock is flexed, the toe resting on the ground, and the stifle joint extended. The swelling behind that joint has increased much. The gastrocnemius tendon and the os calis are normal. The animal is kept in slings for eight weeks; and not improving, he is destroyed. Post mortem shows that the outer head of the gastrocnemius muscle had pulled away from the border of the supra-condyloid fossa a piece of bone, and that there was a considerable amount of hard, white fibrous tissue around the seat of injury. There were also several small pieces of bone loose. The other part of the muscle was normal.—(*Veter. Record.*)

FRACTURES IN FOALS [*H. Snarry, M. R. C. V. S.*].—The record of two cases successfully treated. In one a carting foal has a fracture above one hind fetlock. The limb was fixed with a strong bandage made of harding and covered over with a woollen band. A Gooch's splint, cut to length and width required, was applied around the leg and covered with plaster bandage. The apparatus was left for three weeks untouched, when it was changed. Ten days later it was taken off for good. There were some small cutaneous sores which were properly attended to. Perfect recovery with little blemish. The second case occurred in a sucking colt, which had a fracture of the radius about its lower third. The treatment was the same as in the first case and in 48 days the recovery was also perfect.—(*Ibidem.*)

UNUSUAL LESIONS OF THE FOOT [*T. Fenn, Addison, M. R. C. V. S.*].—An aged cart horse had, on a few occasions, been lame and had suppurating abscesses in the immediate centre and front of the coronet. The difficulty returned another time as a swelling, painful and soft in the centre. Resisting to fomentations, poultices, deep point-firing and blistering, the horse was destroyed as a matter of economy. On examination at post mortem, the enlargement was found to consist of dense fibrous tissue, which, being removed, exposed a deep cavity in the centre of the anterior surface of the os coronæ. Around this, there was a great deal of exostosis. There was another cavity involving part of the articular surface opposed to the os pedis. Several

channels were also found running in all directions through the soft structures of the foot. There was also large side bones and a hole about the size of a small seed in the centre of the articular surface of the os pedis.—(*Veter. Record.*)

**TWIST OF THE DOUBLE COLON** [*Prof. E. Wallis Hoare, F. R. C. V. S.*].—Seven-year gelding showed colics with intermittent struggling spells; striking the walls of his box with his fore feet, laying on his back with hind legs crossing each other in a peculiar manner; when attempting to get on his feet he sat on his haunches and remained in that position for some time. Very slight tympanitis, abdominal muscles hard and tense pulse very weak, countenance anxious, mucous membranes injected. Chloral hydrate was administered. Death the same day. **AUTOPSY**: Peritoneal cavity contained yellow colored serum. Cæcum out of its usual position, with apex close to the diaphragm. Intestines very anemic and empty. Double colon was dark in color and the second and third portions were found to have a double twist close to the suprasternal and diaphragmatic flexures.—(*Veter. Johnn.*)

**SUPRASCAPULAR PARALYSIS** [*Capt. G. P. Knott, A. V. C.*].—Australian mare gets the off foreleg into a deep hole and falls violently on the right shoulder. She rises immediately, but when called to move she acts as if she had fracture of the shoulder. The symptoms were typical: "When she walks in a straight line the shoulder, when weight was placed on the limb, was jerked away from the chest wall and in fact looked as if only held in place by the skin. The leg was carried in adduction; no pain, heat or crepitation excluded possible fracture." **TREATMENT**: At first for a few days she was put in slings and then turned loose in her stall with sawdust bedding. The shoulder was treated with massage and stimulating liniments. The scapular muscles became first much atrophied; but after a while the animal began to improve. Blister was applied, then moderate exercise, short trot and finally returned to work.—(*Ibidem.*)

**A BULL DOG CALF** [*R. Waghorne, V. S.*].—Concise record of the delivery of a young cow which went her full term and was half an hour in labor. She was delivered of a calf with a thick, short skull, a face very like that of a bull dog, and a short, squat body with a foot at either corner, but without any leg

bones whatever. He survived one hour, shaking its head and moving his eyes.—(*Ibidem.*)

**AN INTERESTING SPLEEN—A CASE OF HODGKIN'S DISEASE** [*D. Forwell, M. R. C. V. S.*].—Well-bred bull dog, nearly six years old, has been well up to four months ago, when it was noticed that he would get tired after moderate exercise, breathed abnormally, coughing and retching occasionally. Two enlarged glands were observed six weeks ago in the throat and near the front part of the sternum. They grew bigger and became as large as a hen's egg. Then two others developed in the hind quarters, one on each leg, above the hock in the gastrocnemius muscle. The temperature varied between 102° and 103° F. Another tumor was removed from the groin, where it was in the position of an inguinal testicle. The right testicle was also taken away. The dog kept on wasting away and was finally chloroformed. Five tumors were found in the pleural cavity. They were the size of a walnut. There were two others on the mesentery. The liver was enlarged. The kidneys were normal. The spleen was enormously enlarged and weighed two pounds five and a half ounces. Sir John McFadyean pronounced the case one typical of Hodgkin's disease.—(*Veter. Journ.*)

**CHRONIC NEPHRITIS IN A DOG** [*Prof. E. Wallis Hoare, F. R. C. V. S.*].—Six-year old fox terrier has gradually become emaciated, his appetite is capricious, and marked anemia is a prominent symptom. Heart shows marked increased impulse, palpitations with the slightest exertion. His respiration is accelerated. No thirst, no renal symptom. One morning the dog is found dead. The right kidney is very much atrophied; its capsule adheres firmly and the surface of the organ is irregular. In section the texture was so tough as to almost resemble cartilage. The left kidney is not so extensively diseased, but similar to the other. Both organs were pale. The left ventricle of the heart was much hypertrophied.—(*Ibidem.*)

**TRANSMISSIBILITY OF HUMAN INFLUENZA TO CATS** [*O. Stinson, Assistant to E. R. Smythe, M. R. C. V. S.*].—The inhabitants of the town and others surrounding had influenza. During the convalescent period of some of them their cats became diseased and presented similar manifestations or troubles of deglutition; inflamed condition of soft palate and larynx, peculiar wheezing in respiration. The history of four cases is

given and points to the transmissibility of the disease from the owners to the cats: 1. Cat had difficult deglutition, lassitude, sneezing, discharge from the nose, fetid diarrhea. The maid servant had influenza three days before and the cat spent most of its time with her. 2. Mixed-bred cat, had sore throat, sneezing, discharges from eyes and nose. Belonged to a doctor where the whole household had an attack of influenza. 3. Common cat. Attempted deglutition, discharges from eyes, nose and mouth, vomiting, gastric catarrh. Infected by an occupant of the house. 4. Persian cat. Difficulty in swallowing, sneezing, pneumonia, cardial failure and death. Belong to household where every one recovered from influenza. Many other similar cases were also observed and are not recorded to avoid repetitions.—(*Veter. News.*)

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## FRENCH REVIEW.

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By Prof. A. LIAUTARD, M.D., V.M.

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HEMATOPINIC PITIRIASIS IN A HORSE [*Emeritus Professor F. Pouch*].—This horse was one of a stable where the best conditions of hygiene were carried out. Cleanliness, grooming, light, etc., etc., were as perfect as possible, although a stable for working horses. One day he presented a series of peculiar, almost alarming, symptoms. Local sudation on parts of the body, small cutaneous excoriations at the base of the tail, the horse suddenly bites himself with rage here and there on his legs. He strikes with his hind feet. He crouches down and against the one who passes his hand over his rump or his left thigh or while the fetlocks are examined. He almost will fall in his efforts to relieve the itchings. The biting rage increases; it becomes more frequent and more violent. The animal is constantly in motion, his eyes are brilliant and their glances raving. His features are expressive of great pain. The horse is literally raving mad. And yet he has no rabies; he drinks with avidity a pail of water. A dog is brought to him for the "dog test" of rabies, the result is negative. Diagnosis is very obscure. It is perhaps a nervous manifestation and bromide of potassium is given internally and ointment of muriate of cocaine prescribed externally. Some improvement follows. But later, in three days, after returning from work, the same symptoms

reappeared, although with less severity and permitting a close examination of the skin. All over the body there are little elevations, some with the hairs scraped off. These suggest the idea of the presence of a cutaneous parasitic disease, and treatment prescribed accordingly, viz., general clipping of the whole body, application of Helmerich ointment to be followed by thorough washing. While the clipping is going on, an immense army of *hematopinus macrocephalus* was found swarming so thick that even the play of the clipping machine was interfered with. And yet the general hygienic conditions in which the animal was kept, as well as the fact that no parasitic disease had or did exist in the stable and again that two months previous the horse had been clipped, all had justified the exclusion of parasitic trouble. One more animal became affected also. Petroleum and cresyl brought about permanent relief.—(*Rev. Veter.*)

**PROLAPSUS RECTI IN A MARE AFTER DIFFICULT LABOR**  
[*Mr. Guilhem, Army Veterinarian*].—Six-year old mare delivered a colt and following had a prolapsus of the rectum. For three days the owner attended to her. But, as the trouble always returned, and as it was summer, the condition of the rectum became very serious and complicated with gangrene. The protruding portion is much inflamed. It has the size of a man's head and the rectal mucous membrane is purple, congested, blackish in some parts, and there is a very offensive odor of gangrene. There are many small white worms concealed in some of the folds of the mucous membrane. Amputation is the only chance for treatment. After antiseptic washing, the animal is cast and anesthetized. The protruding mass is carefully drawn out so as to operate on structure less diseased, and amputation is made near the margin of the anus, by making first, a transversal section involving the upper half of the prolapsed rectum and sutured with very close stitches. The lower part was afterwards excised and sutured in the same manner. Hemorrhage was not abundant. Irrigations, antiseptic and astringent washings completed the operation. The animal did well for two days, but on the third, symptoms of gangrenous septicemia appeared and the mare died in a few hours. At the post mortem all the posterior part of the colon was found gangrenous. Liver and spleen congested. Connective tissue around the anus infiltrated. The sutures at the anus had held very well and it is probable that if the animal had been operated earlier she might have been saved.—(*Rev. Veter.*)

MELANOSIS OF THE CRANIAL CAVITY IN A HORSE [*Prof. Bourdelle*].—A very light grey old horse was killed for market. After making a longitudinal section of the head and removing the brain, melanosis of the right portion of the cerebral cavity was discovered. This melanosis was situated on the limit of the frontal, temporal and sphenoidal fossa, and formed a mass resembling a black berry in size and aspect. It was adherent to the cranial wall, was very black in color and regularly lobulated. It had no adherence with the corresponding cerebral lobe. On the surface of this, the arachnoid and pia mater were infiltrated with melanotic pigment. The cerebral hemisphere had been depressed by the tumor which has then made a fossa quite deep for its reception. No other melanotic deposits were found in any part of the animal. From inquiries made about the condition of the horse during life, it was learned that he had never shown any symptom indicating the presence of the tumour nor of the pressure that the growth must have exercised on the cerebral substance.—(*Revue Veter.*)

ENORMOUS HYPERTROPHY OF THE MAMMÆ IN A SLUT [*Prof. G. Petit and R. Germain*].—Hypertrophy is rare in sluts. This animal was four years old. She was pregnant. She was presented for treatment on account of this hypertrophy. No history of her case could be obtained. The mammae of this slut was almost as big as her whole body. They form a big mass, hard, tense, painless and seemed not to interfere with the animal. She could not be delivered and died eight days after. At the autopsy the various mammae were easily isolated, perfectly defined without oedema or infiltration. Their lobulation was perfect and by pressure a few drops of whitish fluid could be squeezed out, having no purulent character. The histological examination failed to discover any alteration. The structure being that of a normal organ in lactation. There was no inflammation nor tumor; it was only a tremendous hypertrophy.—(*Bullet. de la Soc. Cent.*)

GENERALIZED PRIMITIVE EPITHELIOMA OF THE COLON IN A HORSE [*Mr. Laurent, Army Veterinarian*].—This case is unusually interesting on account of its manifestations. It occurred in an old horse of 14 years, of very light grey color. He had always been slack to do his work. One afternoon after a warm day he is restless, moving to and fro as he stands, he rushes against the wall. He seems to be in a state of stupor, with his

eyes partly closed, his respiration and circulation but slightly accelerated; no perspiration, but the eyes are very congested and saffron color. To make him turn is difficult; it requires the help of several men to prevent his falling. Five kilograms of blood are extracted by venesection. The blood is black and thick. After this bleeding the horse is taken to a shady spot. Half an hour later when attempt is made to move him to his stall, he is found stiff all over, unable to stir ahead or backward; he is a rigid and inert post. One gramme of caffeine is injected and after 10 minutes he moves, his head is carried up, the eyes are wide open and brilliant and he goes to his box where he takes a good meal. The next day he received 35 grammes of aloes. For 5 days his general condition is improving and outside exercise is ordered. He cannot go far and as he is turned back he falls down, gets up and then is taken with a typical crisis. He takes the position of an animal pulling a heavy load, his body carried forward with his neck contracted, the jaws tightly closed and stepping on the same spot from one leg and then the other. Respiration is hurried, eyes wide open, pupils dilated, head turned to the left but slightly twisted to the right. These symptoms lasted ten minutes and after that the animal looked for his food. These crises, however, became more frequent and followed by longer periods of comatose condition. Iodide of potash gave no improvement. Caffeined physiological serum was also injected and at first did wonders, but the improvement that followed its administration did not last and one morning the horse was found with impossibility of swallowing, by complete paralysis of the muscles of deglutition. All treatment became useless; the horse died in a complete state of marasm. POST MORTEM: Intestinal mass entirely empty. Liver shows on its right portion tumors of various size, rounded, mammillated, elastic in consistency, and yellowish on section. On the right side of the fleshy portion of the diaphragm there is a similar neoplasm as big as an egg. All the lymphatic glands of the abdomen are involved in the cancerous invasion. At the diaphragmatic curvature of the colon there is also a pedunculated tumor weighing 1,050 grammes. It is a typical epithelioma. In the cranial cavity the right cerebral lobe is congested. The meninges are thickened and on the surface of the frontal lobe is found a tumor similar to the others. It is surrounded with a soft peritumoral degeneration containing thick creamy inodorous fluid. All the other organs of the abdomen and thorax were

found healthy with the exception of purulent sinusitis.—(*Ibidem.*)

**PULMONARY EMBOLY BY PIECES OF TROCAR [M. *Prevot and Barrier*].**—This is the result of a post mortem of a horse with the following history. In March, 1907, while being bled with a trocar, a horse made a sudden move, the canula of the trocar broke and a piece dropped into the right jugular. Since the animal has not seemed to be incommoded and has stood on the same vein numerous bleeding and intravenous injections. As he was getting old, being twenty, and the quality of his serum was not as good, he was destroyed in 1910. The autopsy which was made allowed researches for the piece of canula of the trocar. The jugular and heart were free from any lesion. The pulmonary artery was carefully examined and in one of its divisions, near the periphery of the right anterior lobe, the foreign body was detected surrounded by a very compact fibrous envelope. The caliber of the artery was entirely filled by the canula and no apparent lesion of the pulmonary tissue could be found. The piece of canula measured six centimetres in length.—(*Ibidem.*)

**SUPPURATIVE ASCENDING CHRONIC ANGIOCHOLITIS IN A CAT [Mr. *Roquet*].**—When it has an intestinal origin, inflammation of the biliary ducts is designated as ascending by opposition to when it is of bloody origin, when it is called descending. The following is the first described in veterinary literature. The cat was eight years old. No clinical history; one month ago he had symptoms of acute gastro-enteritis. Shortly before his death he was much reduced in flesh and was unwilling to take any kind of food, solid or liquid. He died in a state of coma. In opening the abdominal cavity and removing its contents, the liver calls at once the attention. It is slightly enlarged, dark brown in color and covered with greenish spots. It is firm and though its capsule shows numerous little light yellow or grey yellow deposits of small size. They are rounded or oval and do not project on the surface of the organ, differing in this from tuberculous granulations. An incision through the liver reveals the presence of the same lesion in the parenchyma of the organ. In the scrapings, streptococci, staphylococci pyogenes are found under the microscope. The biliary bladder contains little thick viscous bile. Hepatic lymphatics are swollen. In the pancreas

there was a small nodule of a white yellow color. The stomach and small intestines show lesions of acute catarrhal gastro-enteritis. The great omentum was atrophied by the absence of adipose tissue. The microscopic examination of the lesions established beyond doubt the intestinal origin and the complications of catarrhal gastro-enteritis.—(*Journ. de Zootech.*)

SUPPURATIVE INTERNAL OTITIS IN A DOG [*M. Matharan, Army Veterinarian*].—This fox terrier was fourteen months old and since some time has been suffering with auricular catarrh of the right side. A long series of various treatments has been tried but without any result. The suppuration has never stopped. The dog fed well and was in satisfactory condition. As the discharge was becoming foetid and as there was no improvement, after a careful examination of the mouth, and nasal cavities, surgical interference was decided. The dog was anesthetized with intraperitoneal injection of chloral and morphia and an incision made at the base of the ear on the outside. As the external ear presented nothing abnormal, the membrana tympani was punctured and an exploration revealed the presence of spikelets of brome in the middle ear. These were extracted and after free washing the wound was dressed aseptically. Unfortunately the animal died three days after with pulmonary congestion. To anesthetize the dog the ordinary dose was used, but it gave rise to very alarming symptoms of syncopa which required more than two hours before they were overcome and on that account the author suggests the injection intraperitoneal of one cubic centimetre by kilogramme of the weight of the animal, of a mixture of muriate of morphia 0 gramme 50 centigrammes, chloral 10 grammes, water 100 grammes. This solution has never given any bad results and is perfectly safe.—(*Rev. Gener. de Dede. Veter.*)

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#### BELGIAN REVIEW.

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By Prof. A. LIAUTARD, M.D., V.M.

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TUBERCULOUS PSYCHOSIS IN A CAT [*George Hasse*].—This animal, which had habits of running out, becomes suddenly sedentary. Her abdomen begins to get large. She has not yet

shown true psychical symptoms except after some little time. Her appetite becomes more and more voracious every day, she is more gay and more active in her actions. She also becomes more affectionate for the people around her, following her master at every step and asking to be petted and caressed. She wants to be coaxed before she partakes of her meal. These manifestations are considered by the author as psychical characters of her ailments, similar to those which are observed sometimes in human beings. Consulted for her ascitis it was advised to chloroform her. At the post mortem 2,165 grammes of fluid were taken from the abdomen. There were lesions of tuberculosis in both lungs and in the parietal peritoneum; they contained tubercle bacilli.—(*Bullet. Medec. Veter. Prati. Malines.*)

**PSOROPTIC MANGE IN DOG** [*Prof. Hebrant and Antoine*].—Frequent in horses, sheep and rabbits this affection has not yet been recorded as occurring in dogs. The case described by the authors relates to an adult pointer which had a generalized skin disease. The entire surface of the body was covered with spots, hairless, and where the skin but slightly inflamed, was covered with scabs. There was *no itching*, but the animal had a characteristic odor of mice. The examination of the cutaneous crusts made with the microscope, allowed the discovery of the acarians of the psoroptic gender, with their eggs and larvæ. The presence of this parasite, which lives only on the surface of the skin explains the absence of the itching and of the lack of cutaneous inflammation. The origin of this affection in this dog is explained by the authors by the presence of numerous rabbit houses close by where mangy animals were kept.—(*Annal. de Bruxelles.*)

**ANTISTREPTOCOCCIC SERUM IN PURPURA** [*Mr. C. Verlinde*].—Taken with distemper shortly after being bought, a five and a half-year old horse had some difficulty in regaining his health, and as he is about fairly recovered he presents suddenly evident manifestations of purpura. The left hock is first taken. Then the right and both knees. They are swollen and the animal moves with soreness and difficulty. There are petechia in the nose and also a bilateral nasal discharge. Temperature is up to  $40.1^{\circ}$  and  $40.5^{\circ}$ . The swellings rapidly progress. Both hind legs are taken up to the perineum and extend upward and forward. They go higher than the knees. Two injections of poly-

valent serum are made. Slight improvement is noticed the next day. New injection. The horse is so much better that no injection is made the following day; but then there is a relapse. The swellings which had reduced have regained their size. There is one under the chest extending to the abdomen and sheath. The head is enormous, hippopotamus-like. Tracheotomy has to be performed. Two injections of serum are followed by gradual amelioration, which this time is kept up by the use of serum resorted to for five days more. The tracheal wound is allowed to cicatrize and finally the horse completes his recovery and resumes his work.—(*Bullet. Medec. Veter. Pratiq. Malines.*)

**SPASMS OF THE DIAPHRAGM IN A COW [H. R. Bredo].**—A cow, said the owner, had obstructions of the oesophagus. She is a fine Dutch animal which, instead of ptyalism and tympanitism, has a very accelerated respiration, difficult, principally abdominal, loud and spasmodic. The mouth is kept open, the tongue is hanging, the inspiration is short and jerky. Respiratory movements are isochronous with cardiac beatings. Auscultation reveals no lesions in the lungs. Spasms of the diaphragm are diagnosed. The symptoms passed away of themselves. The cow had another spell the next day. Several months later the animal had an abscess on the lower part of the abdomen, on the left side, and near the false ribs. Opened, a large quantity of pus escaped and in it a piece of wire was found. The author believes that it was the original cause of the spasms manifested on two occasions by the cow.—(*Ibidem.*)

**CRYPTORCHIDY AND EXTERNAL HERMAPHRODISM IN ANIMALS BORN OF THE SAME STALLION [Prof. Licnaux].**—This subject was a stallion which had a small penis with small sheath placed way behind, between the hind legs. Two years old, the subject has genital organs so disposed that he may be taken for a mare. He has no visible testicles and in the inguinal region there are two mammae. Below the anus, there is a kind of vulva, vertical slit, about 15 centimetres long, with two thick cutaneous lips or folds which unite to acute angle upward and downward, forming a round commissure below; in which is detected the head of the penis with its urethral canal bent backward. The animal micturated like a mare, he was of kind disposition, but became excited approaching mares and then he entered in erection; the penis protruded a few centimetres only,

and assuming an horizontal direction backward. The animal was evidently a male individual. Castrated, the testicles were found both in the inguinal canal close to the peritoneum. The same stallion, father of the above, had three other colts. One had the penis and sheath well formed, but situated a little backwards. He had no testicles, but two udders which were normal. The testicles were well up in the inguinal canal. The second had the penis and sheath half way between the inguinal region and the anus. As he grew old, these descended some. The testicles were absent; mammae well developed. Castrated, the testicles were found up in the inguinal canal. In the third, the sheath and penis were like in the preceding animal, but more rudimentary and situated farther back. There was double inguinal cryptorchidy. The udders were rudimentary.—(*Annal. de Belgique*.)

CONTRIBUTION TO THE STUDY OF UTERINE LACERATIONS IN Cows [*Mr. H. Bredo*].—For reasons of economy more than any other the author, when he first went to practice, used to recommend the slaughtering of animals which were suffering with such injury, when it occurred as immediate consequences of difficult labor, a torsion of the uterus or by manipulations executed by other parties. But having afterwards noticed the resisting power of bovines to vaginal and uterine lesions, and making closer study of the pathogeny of the accidents, he changed his opinion. Indeed in taking into consideration that a gravid uterus presents a volume ten times superior to that in state of vacuity and that consequently a wound of 10 centimetres in length would measure at the most but one when the uterus had resumed its normal dimensions and again that the edges being more or less swollen and thickened, the wound would almost be completely closed, it became evident that although serious, the accident was not necessarily fatal or incurable; especially if the injury was located on the upper or lateral planes of the organs and under such considerations, Bredo concludes with four principal indications: 1. Extract the contents of the uterus. 2. Stimulate the retraction of the uterus with cold compresses over the loins and back. 3. Allow a diet of easy digestion. 4. Watch the patient and do not interfere with drugs unless necessary. Cases of recovery are then described by the author, eight days being necessary to consider the animal as completely recovered.—(*Bull. Medec. Veter. Prat. Malines*.)

## SOCIETY MEETINGS.

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FOURTEENTH ANNUAL MEETING INDIANA VETERINARY MEDICAL ASSOCIATION, ROOM 12,  
STATE HOUSE, INDIANAPOLIS, IND.,  
JANUARY 12-13, 1910.

Wednesday Morning, January 12, 1910.

Meeting called to order by President Boor, of Muncie. This is the fourteenth annual meeting of the Indiana Veterinary Medical Association, and it is called to order for any business that may come before it, and also any of the pleasures that go with it, and I think they will come after awhile. Now the first thing on the program is the roll-call. I believe that some members may be surprised if their names are not called. I don't know the standing any more, but do know when a member is in arrears a certain length of time his name is dropped from the roll; so if your name is not called you will probably find that you are in arrears and you want to see the secretary. Call the roll.

Roll is called with an answer of only fifteen and the room well filled.

President Boor—You have heard the calling of the roll. Are there any remarks to be made? If not, the reading of the minutes will come next. Secretary, read the minutes of the last meeting.

Minutes read.

President Boor—You have heard the reading of the minutes. Is there anything in connection with them that you wish to remark about or change? If not they will stand approved as read. Approved.

President Boor—I see the next thing on the program is the president's annual address. Of course I know that it has been a custom for the president of this association to make a very brilliant address upon this occasion. They have all been orators up to the present time. I am not an orator; far from it. I could not make an address if I wanted to ever so bad, but I will make

a few remarks to you along the lines in which I believe we are, or at least should be, interested.

Now we have made a great deal of progress along veterinary lines in the last twelve months, and there is one thing that I want to mention particularly, and that is relative to the use of serums. Now we have been going ahead and using serum for vaccination and injections of all kinds and taking it for granted that they were up to standard, but we didn't know what the standard was probably; in fact I don't. I don't know the basis from which the unit is derived, but the United States government ought to look after the standardization of the antitoxins or units contained in the serum used for tetanus. I think this is a step in the right direction, and I also think that it is the duty of this association to take cognizance of the fact, and I think the secretary should be instructed to notify the chief of the Bureau of Animal Industry, Dr. A. D. Melvin, that we heartily endorse the step taken in this direction, not only the antitoxin used in tetanus, but also of other serums used, that they should be standardized. That they should have a definite strength, and this stamped upon the bottle. We use the preparations and we get ill results; it reflects upon us and not the manufacturer. We have to charge a pretty good price for the use of these preparations, and when you go into a man's pocket and don't do him any good, it is hard upon the practitioner, and you get an ill repute. We should look after this matter not only as an association, but as individuals. And further I wish to say something in regard to the work of the entertainment committee in getting papers for the meetings. Now, gentlemen, this is not right. We should all endeavor to help this association along. Each individual member will say "I can't write a paper that will be of interest." That is not true. There is not one here that has not had an interesting experience, or a new idea at least to some one else. You are all observant; that is the method you have of diagnosing your cases. There is not one here but that has ideas, and that very fact fits you to write a paper and help disseminate the idea to others of our profession. The learning that we get by observation we should bring here and pass it around, as it were, and thereby go away, all of us, better for having come to the meeting and given our widow's mite. We don't want the young members to stand back, because they have only been out of school a year or two, and when they are invited to contribute a paper we would like to have them come forward and do their best, and we will stand for it.

Secretary's report read and approved.

President Boor—What shall be done with the report of the Legislative Committee? It seems to me that this report, in so much as it was in the hands of the committee, could be dispensed with, except the reading of the final result, and if this is the pleasure of the association we will simply have the footings. Secretary reads footings which show that the amount raised was \$60.00 short of expended footings, that being made up from the "legislative fund" of the association. Now, gentlemen, this \$60.00, as I understand it, was paid in from the funds that are annually set aside by this association, subject to the order of the State Board. Report accepted.

Treasurer's report showed a balance on hand of \$299.99. Accepted.

Qualification of New Members.—Board of Censors reported favorably upon twenty-four applications.

Dr. R. A. Craig—I move you that this association tender Dr. Melvin its vote of thanks for taking up the serum proposition. I think it ought to go on the minutes of this Association and a copy be sent to Dr. Melvin. Seconded by Dr. Ferling. Carried by rising vote.

President Boor—Secretary is instructed to send a copy of this motion to Dr. Melvin. I wish to say at this time that you are all invited to lunch at 12 o'clock at Pitman-Myers Laboratory; also that a photographer is waiting to take a snapshot of this association as soon as we adjourn.

#### REPORTS OF COMMITTEES.

Dr. Bronson—I was instructed by the chairman of the Entertainment Committee to report a dinner at 7 p. m. to be served at the Mannechor for 75c. a plate. Roast capon to be the "piece de resistance," and it is to be passed as often as called for, or in good old German style.

President Boor—The next committee is the Legislative, and as Dr. Roberts is chairman and present, I will ask him to report.

Dr. Roberts—The chairman has no report to make in reference to legislative matters, only that we failed getting a bill passed last legislature that we wished passed, but as that is not the first failure we have met with, we are undaunted and hope to have better success next time with that bill or one equally as good. We have at present time an amendment to the old bill to put the state of Indiana on a basis with the other states with

reference to the legislative laws. I think every veterinarian should use every effort possible to get this amendment passed at the next session of that body.

President Boor—We will adjourn until 1 p. m. if there is no objection. Consent.

Wednesday Afternoon, 1 p. m., January 12, 1910.

President Boor—We will take up the literary program; the election of officers will be left over and we will take up the first number on the program, which is "The Hypodermic Syringe; Its Proper Use in Veterinary Practice," by Dr. Herbert Palmer, of Chicago.

#### DISCUSSION.

Dr. Fleming—In inserting the needle the doctor said to place the thumb over the bulb of the needle and press it down under the skin. In pressing the needle into a horse or dog or such animal, there is little trouble, but in putting it into the hog or cow I have never been able to meet with success. I use the same method in the thinner skinned animals, but with the cow (and I have had a lot of experience, especially in the injection of tuberculin) I have had trouble in getting my needle in. The animal is twisting and turning under you and if you endeavor to force the needle in, it breaks off or bends. I would like the doctor to make clear to me what points he selects upon a cow, steer or bull to make this injection.

Dr. Palmer—When we come to the bovine proposition, it is impossible to get into the skin with one thrust, but I have had no trouble in getting the needle under the skin of the average cow. You ought to have a short needle, and by simply taking and giving one quick thrust, I have no trouble in getting it in blood. It is just the fraction of a second until it is in place; I just force it quick. Don't go up, just force it down and in.

Dr. Fleming—The skin of the neck is very heavy and lays in folds, would you try to put it in at this point?

Dr. Palmer—I believe I have been in as many different localities around a cow as anybody has. It is almost impossible in some cases, and I then go back on the withers and inject there. If you go into a pen, inject one on one side and reach over and inject in another one, and by so doing you can inject four. Have a needle of 15-18 caliber well sharpened, and you won't have so much trouble. At least such is my experience.

Dr. Bartholomew—I happened in by accident and would like to say just a word. I am a doctor of medicine, and have had twenty years of experience with the hypodermic syringe. The plan of subcutaneous injection among physicians of the human body has disappeared long ago. We never put a hypodermic syringe under the skin any more. I think it would be a good suggestion for the veterinarian. Always put it into the muscles; it is easily done and never causes an abscess, and is much simpler. I think if you would use a large syringe, a needle of large caliber, and introduce it into the muscle, you will have no trouble in introducing it, and I consider it easier and simpler.

Dr. Buzzard—I would like to ask Dr. Palmer if there is any difference which way you turn the needle in regard to the slope of the point?

Dr. Palmer—I have never paid any attention as to where the point was, whether toward or from me; I never paid any attention at all. And while I am on my feet I must say that I disagree with the muscular insertion of the hypodermic needle. I believe he would have changed his advice, gentlemen, if he had been working among animals for the last fifteen years. I never saw a hypodermic used any length of time but what there was a possibility of an abscess forming sometime. If you have injected as many doses of irritating material in an animal as I have, you would realize what an abscess means. If you get one, why not have it under the skin instead of in the muscle of the hip, for instance.

Dr. Nelson—I agree with Dr. Palmer on this subject; we don't want the muscular soreness, there is no necessity for it. In cattle I find the least trouble just back of the shoulder, or scapula, and with a short sharp needle and a quick thrust you will have the minimum amount of trouble.

Dr. R. A. Craig—in cattle and horses I always use the subcutaneous method and I find by repointing my needle we have better results. I always put my needle on the emery wheel and grind them and then finish them on the hone, and I find that I can use them on 40 to 50 cattle without repointing it. In hogs we find the subcutaneous method does not work out, as you will get more abscesses than with the intramuscular method, but I prefer the subcutaneous. To be sure you get a muscular wound that discharges two to three days, but outside of that I think it is productive of better results.

Dr. Bronson—I don't want to prolong this discussion, but I do want to say that I began using the hypo. as soon as I left school nine years ago, and I have never used anything but the subcutaneous or intravenous methods and have had so few abscesses that I don't want to change.

Dr. Boor—I think, gentlemen, that the use of the hypodermic resolves itself into a very simple solution, especially in cattle, probably in horses, not so much so in dogs, and that is this: have plenty of needles, short, sharp, stout and clean, and you will have very little trouble.

Dr. Fleming—I would like to ask Dr. Palmer about the amount of antitoxin he injects.

Dr. Palmer—Our method is simply to have a hypodermic needle, to which is attached a rubber bulb connected with the bottle; we pumped the air out of the bottle and forced the liquid up into the tube, into the needle and out; and I have given as high as 200 to 300 c. c. or 500 out of the needle under the skin, and in a few hours you would not be able to detect where the injection was made. Now get this point clearly in your mind; for instance, you wanted to give 1 grain of strychnine subcutaneously; you will get the same result whether you use one quart or one pint of liquid. The strength of the medicine does not depend upon the amount of liquid with which you dilute your tablet to make your injection; so it is advisable to, under general principles, use as little water or solvent as possible.

Dr. Carter—I find that the 10 c. c. syringe filled with the dissolved tablet gets quicker action than a larger amount.

Dr. Boor—Dr. Palmer will have to get the train that leaves shortly, so I think it is right that we thank him for his excellent paper.

Dr. Roberts—I move you that we extend to Dr. Palmer a vote of thanks for his paper on the use of the hypodermic syringe. Carried.

Dr. Palmer—I certainly thank you very much for the privilege of talking to you to-day. I have been in different parts of the United States and certainly it encourages me to see the profession advancing at the rapid rate that I as one of you can see it. I thank you again for the attention given me to-day, and I certainly would be glad to stay your session through, but I must be with the Minnesota Association to-morrow.

President Boor—The next will be "Applied Therapeutics," by Dr. Earl Miller.

Dr. W. B. Craig—There are a great many things about therapeutics I don't understand. As far as understanding the blood current, I for one do not understand it. I don't think we understand it as we will in a short time. I think that serum therapy is something that is coming forward and it will be only a short time until we have definite facts, until we have definite understandings, and all we have to do is to practice prophylactics. The tuberculin test in cattle, antitoxin for tetanus, I don't know much about that; there is a degree of uncertainty about them. Of course there are some who will, and do think, differently, but that has been my experience and observation.

Dr. R. A. Craig—I would like to ask Dr. Miller in regard to the experiments with this serum. I met Dr. Anderson in Chicago a couple of weeks ago and asked him that question, and he said they had a report from practically all of the state organizations, and there was quite a diversity of opinion as to the proper method of producing it, and it was impossible to draw any definite conclusions in regarding to the producing of this serum of vaccination that will meet all demands. The question is really this, the real trouble lies as to the organism that really produces hog cholera. For instance, I have met one man that claims that he has that one organism isolated; another man from Missouri claims to have another organism isolated, but we must be thoroughly satisfied that we have it and be able to produce it.

Dr. Miller—We can produce an immunity against diphtheria, tetanus, certain species of streptococcus, when we infect a horse or cow and produce a toxin; but we wish to produce a vaccine of that particular organism rather than produce a serum of animals that have been made more or less immune.

President Boor—if that is all the discussion, we will have the next, "My Experience with Hog Cholera," by Dr. F. A. Bolser, of New Castle.

President Boor—I think it is only a question of a short time until we will be able to control this disease, as well as lots of others along this line by this method. I suppose quite a number of you have had some experience along the lines laid out in this paper in the last twelve months, so I wish to hear from you, Dr. Axby.

Dr. Axby—in regard to Hog Cholera, I don't know that I have much to say aside from the fact I am glad to say that we don't have much of it. It made its appearance occasionally, but in the nine years that I have been in Lawrenceburg, only one

outbreak has occurred. It was not very severe and existed only in isolated localities. In regard to the serum treatment, I really have nothing to say, only to ask where it can be obtained.

Dr. Bolser—I got my serum from Dr. R. A. Craig, of Purdue University.

Dr. Axby—Did you have any difficulty in obtaining the serum?

Dr. Bolser—Yes, sir; that is one of the difficulties at present. In fact there are a great many difficulties mentioned in this paper, as abscesses, the quantity of serum needed, etc.

Member—Does this serum seem to have any effect upon Swine Plague?

Dr. Craig—The only highly infectious disease we know of in hogs is hog cholera. We are unacquainted with the specific factors of or that produces hog cholera. I don't wish to make the assertion that there is no infectious pneumonia in hogs, because I have met with a case. We believe that there is only highly infectious disease in hogs and that is hog cholera. I don't want to take the time of this association, but I would like to say something regarding the method of producing hog cholera serum. As we have no cultures available for producing the serum, virulent blood is used. Young hogs are given hog cholera by inoculating them with hog cholera blood. These hogs are supposed to develop fatal symptoms in from 8 to 15 days, if not, they are thrown out and not used for blood production. The fatally sick hogs are killed by cutting the carotid artery near the base of the neck; the virulent blood collected and defibrinated and injected into immune hogs. There are different methods of injecting this blood, or producing the hyperimmune as the animal is called, after having received the blood. We use the subcutaneous quick method. This consists of injecting 10 c. c. per pound of live weight, beneath the skin or into the muscles of the inner regions of the thighs or shoulders. The intravenous method is sometimes used, or the blood may be injected directly into the abdominal cavity. After waiting from one to two weeks, the hyperimmune is bled; the fibrin being removed from the blood and a little carbolic acid being added as a preservative. We also bled the animal from the tail, as there is no superficial vein to be used; for this reason we secure hogs with as long tails as possible. A sterile vessel is provided and a small piece of the tail is cut off and the blood collected. These bleedings are made at intervals of one week, and when the ani-

mal's tail becomes so short that we cannot handle it, we have to kill the animal. It is because of the fact that we have to use virulent blood that the serum is so expensive. To Drs. Niles and Dorsey belong the credit for originating the method of serum production. The Bureau of Animal Industry and the various experiment stations are working to perfect the serum, and there has been some improvement since the method has been made public. I believe that within a few years that serum production will be much cheapened. It is surprising how many simple things come up that are important factors in the consideration of the cost of the serum.

Dr. Bolser—What per cent. do you think you save in the herd, in which the disease is just breaking out?

Dr. Craig—We have treated about 4,000 hogs under a great variety of circumstances or conditions, and the reports received show us that we have saved 80 per cent. We are using the serum almost wholly as a vaccine. We use pigs weighing from 40 to 80 pounds in testing the serum. Into two of these we inject 10 c. c. serum and 2 c. c. of virulent blood; two with 15 c. c. serum and 2 c. c. blood; two with 20 c. c. serum and 2 c. c. blood; the 2-3 checks are given 2 c. c. of virulent blood alone. If the pigs injected with 10 c. c. show only slight symptoms of illness, we know that dose won't do; and if our checks that we have inoculated with virulent blood alone do not die, then we have to repeat the test.

President Boor—if that is all the discussion upon Hog Cholera, we will have Dr. Nelson's paper on "Mad Itch or Pruritus in Cattle."

President Boor—I am quite sure that a great many of you, especially those who practice in the country, occasionally come in contact with some of these cases, and you have thought you had rabies. This is a good paper; let's hear from you.

Dr. Roberts—I find this paper one of great worth to the practitioner of this or any other state. In the first place it is the first time that his disease has ever been brought before the veterinarians of this state, and I assure the doctor that there are many of the older practitioners that have been sadly up against it in meeting this kind of trouble. I think he has made the case as clear as words can possible make it, and I assure you that it will be one of the papers that should go down in the history of this association as one of great value. One point I wish to make emphatic, and that is when the disease once sets in, there is but

one termination. It is fatal; there is no treatment that I have found.

Dr. Fleming—I would like to ask the doctor how he can get his purge of sulph. magnesium through; is it strong enough? I think not, for I have met a few cases.

Dr. Nelson—I don't know anything much better in cattle than a combination of glauber salts and oil.

Dr. Fleming—In these cases you have an impaction, have you not? Did you ever use barium chloride? There is an undigested mass in the rumen, and I found that by stimulating the heart and giving them a large dose of barium, I got fair results. I wondered if you had tried it.

Dr. Nelson—No, I have never used it.

Dr. Buzzard—I would like to ask Dr. Fleming if he always gets a good effect from barium chloride in 1 grain doses?

Dr. Fleming—Not always; never give it to horses.

Dr. Boor—Will say this for barium; it is very active, and while I have had some results that I did not want and was not looking for, I have also had good results; but you have to be very careful about using it intravenously, as it will interfere with the action of the heart. I use small doses, 60-70-80 grains, of barium orally. After a while you will find you are having a peristaltic action taking place, and it will last a good long time. It will empty out the bowels, and it will do it much quicker than any other preparation that you can give outside of arecoline which acts very quickly and loses its action very quickly. When you want quick action, you may like arecoline better, but you will find from the oral use of barium that you will get very good results. It seems to me I have heard Dr. Roberts say something about barium chloride.

Dr. Roberts—With reference to barium, I have had a varied experience with it, and the only ill effects I ever had in giving it was late one night when I had a case of impaction, mild I thought; after administering the dose I told the owner I would be at my home, and he could call me if he desired. He did so and told me the animal was lying on its sternum, and that he guessed it was alright and he was going to retire. The next morning he called me stating that the animal had rested well all night, as it was in the same position as when he talked to me the evening previous.

Dr. Catey—I always expect good results from barium, and when we do not get them I think it is of our ignorance of its use in the proper place and time.

Dr. Rogers—I have been using barium for a number of years and I cannot see why Dr. Roberts should fall out with it because he had one patient die. We all use remedies with which we do not get good results. Never use it both intravenously and orally. I cannot say I get good results in the veins, but in the stomach of the horse I do. Never give it to an animal with a weak pulse. I think it was three years before I had anything to happen; it was six miles in the country. I was cold and discouraged with myself and the profession generally. The animal had been sick and they had been trying to get me for twenty-four hours. I examined the horse and found that he had a congested mucous membrane. I thought I had used it in just such a case with good results. I called for warm water and used seven grains and one-quarter grain digitalin. I made the injection; the animal opened its mouth and fell dead. I discontinued it I think for about a year. Another time I was called to see an animal. Its abdomen was distended and it was fighting for air. I called the attention of my assistant student and said, "I want to show you something." The heart was very irregular. I gave  $\frac{1}{4}$  grain injection of barium and in five minutes had action. This student I took in as a partner, and I cannot keep him from using it, although he has been cautioned again and again about the condition of the animal before using it.

Dr. Bolser—Dr. Roberts, what size dose did you use on the animal that rested?

Dr. Roberts—Not an overdose. I usually give 40 grains orally.

Dr. Bolser—I think the great trouble is that we want to get too quick an action and we give too large a dose. I carry  $2\frac{1}{2}$  grains with me all the time, and it is a most satisfactory drug for me that I have in my case. I give it intravenously.

Dr. W. B. Craig—I used it in 40 grain doses for about a year, and was getting good results, until one night I had a case of impaction of the stomach, and gave 40 grains. The man called me about 1 o'clock and said the mare was paralyzed in the hind parts and died in about an hour. Now I had used it a number of times before without bad results.

President Boor—The next is a paper, "Pharmaceutical Preparations," by A. D. Thorburn.

This paper was illustrated with the actual routine of picking the crude drug in a far-off country and bringing it step by step to the point where it was ready for the practitioner to use. It

was highly interesting from an educational standpoint as to the numerous things aside from labor that enter into the production of the finished article ready for use.

Election of officers followed, with the following results:

President—Dr. R. A. Craig.

Vice-president—Dr. T. A. Sigler.

Secretary—Dr. E. M. Bronson.

Treasurer—Dr. J. W. Klotz.

Drs. A. F. Nelson, J. B. Archer and J. L. Axby were then chosen as a Board of Censors.

President Boor—We will return to the programme and have "Specimens," by Dr. W. A. Dryden, of Columbus. The specimens were Hair Ball, Dentigerous Cyst and Cystic Calculi all having been removed from animals in the doctor's practice, and an interesting talk it was.

Dr. Klotz—This specimen of teeth; how many do you suppose there are in this? I have seen a few of these in colts that were only two months old that contained three teeth, and they grow the same as any other teeth, and I believe if you break this one up you will find three-quarters in it. I saw Dr. Williams remove one of these cysts at New Haven that contained two teeth of fair size, but the entire mass was not so large as this one.

Dr. Boor—I will state that two years ago I was called to see a colt that had one of these cysts near the ear. It was noticed first when this colt was running with its mother. I found two teeth that were quite similar.

Member—I would like to ask if these teeth are fast in the skull? I have a horse that has had a discharge from the base of the ear and has been that way for about two years; I opened it but failed to find anything; still open.

Dr. Boor—In the case of mine I opened and removed teeth and all, and I don't remember, but I don't think there was any connection of a bony nature.

Member—I have removed five of such formations and I found a cup-shaped cavity in two of them. Discharge stopped upon removal.

Dr. Klotz—I would like to ask if any of you have ever had any experience in finding these teeth in other regions, ovaries or testicles. I have found one case in which bones were present in the testicles. It did not exactly resemble a tooth as much as it did the ribs of a chicken; there were several small pieces present.

Dr. R. A. Craig—A few years ago we had in our possession a hair ball made up of hog's bristles. The history of this case was something like this: A man butchered and threw the hog bristles where some of the cows ate the bristles. The ball was nearly ten inches in diameter. She died from ruminitis in about two weeks.

President Boor—If there is no one else, I will entertain you for a few minutes. I don't lay any claim in this paper to have discovered anything. I have simply recorded what I have heard others say they used along these lines, and I wish to give you the results of my experiments. My subject is "Roup." (Discussion.)

Dr. R. A. Craig—I want to ask as to the manner of disinfecting the yards?

Dr. Boor—The gentleman who owned the fowls built some very nice houses; they are all built up off the ground and are well ventilated. As to the method of disinfection, we burned sulphur, after they were first sprayed with a carbolic solution. The houses were tight, being covered with tarred paper on the outside, and of course any sulphur that was burned in there, the fumes remained until the house was opened. He washed the drinking vessels with a solution of bichloride twice daily. The chickens that were being treated were put in separate pens from the other fowls, and the men who were working about the place were ordered to wash off their boots before going into the other yards. The yards were sprinkled with coal tar preparation; no cases since December 2. I wish to say that the 3,000 unit dose is about one-third stronger than the 2,000 unit. We laid the chicken on its side and had an attendant lift up the wing, then we picked up the skin and where there is no feathers and injected there.

Member—Did you use more than one injection?

Dr. Boor—Only in three-quarter cases where they were very bad and we went to inject some others, saw some that were not entirely well; we gave a small dose.

Dr. Axby—Did you treat other than the affected birds?

Dr. Boor—No.

Member—Did the cockerels come from the same place the hens did?

Dr. Boor—I understand that they did, but they were not affected, nor have they been. All seemed to me to be pullets that were affected.

Dr. R. A. Craig—Could you explain that to a certain degree by saying that the younger birds are predisposed to affection on account of their age; if the cockerels were older birds?

Dr. Boor—I don't know that they were older; they looked like cockerels to me.

Adjourned to meet at the Indiana Veterinary College at 8 o'clock.

Wednesday Evening, January 12, 1910.

President Boor—Please come to order. We have some communications to read, the report of the State Board of Veterinary Examiners, and a resolution under new business.

Secretary reads communication from Secretary Lyman of the A. V. M. A. as to sending one or more delegates to the California meeting.

Communication referred to a committee composed of the several incoming chairmen of committees. Carried.

Report of the State Board showed 43 graduates given certificates and 16 were up for examination and two passed; also that there was a total of \$11.41 in treasurer's hands. Accepted.

#### NEW BUSINESS.

Resolution—In accordance with article seven (7) of the by-laws, we move to amend section six (6) of said by-laws to read as follows: Beginning after the word honor, "except the office of secretary, which office shall have an emolument of fifty dollars (\$50.00) per annum, as salary for services which devolve upon the incumbent of said office. Said emolument to date from January, 1909."

(Signed) J. W. Klotz, Wm. F. Myers, C. I. Fleming, Fred. A. Mueller and F. F. Jacobs.

Motion to suspend the by-laws and pass the resolution was unanimously carried. Motion to pass the amendment was passed the same.

President Boor—We will now listen to Dr. L. E. Northrup on "Western Quarantine and Lip and Leg Disease," illustrated with lantern slides. (Discussion.)

Dr. R. A. Craig—I would like to ask if you have ever used chloride of lime for your antiseptic?

Dr. Northrop—No.

Dr. Craig—The reason I asked the question is that last year we bought some imported sheep from England, and as you know "Foot Rot" is common in England, and we used tar disinfect-

tants with no results, having an Englishman who cared for them also. We then made a trough and put in the water 46 ounces of lime to the gallon of water, and walked these sheep through the trough once a day; this did the work.

Dr. Northrop—That would be all right I have no doubt, for we use lime and sulphur and more lime for the foot and leg ulceration. Put the sheep under better conditions and they probably would get better anyway, as under good conditions "Foot Rot" does not spread rapidly.

Dr. Nelson—Don't they have a great deal of trouble with the disease on the ranches out there?

Dr. Northrop—Yes, they do; it came up from old Mexico to this country. It is said we get it in this country in the winter when the sheep find it hard to get feed, and scratch themselves or tear their skin. One authority says we never get it below 2,000 feet altitude; another that we get it in the low country. Dr. Wilkins says in England the water holes get so affected with the germ that the sheep get it in their feet in that way. There has been a persistant effort in this country to call it foot and mouth disease, when it is entirely different; the ulcers are altogether different.

Dr. Craig—You spoke of using sulphur; how do you use it?

Dr. Northrop—We boiled the lime and sulphur together for two hours; then let it settle, draw it off and use it. It has proven so satisfactory that the government recommends it as best and cheapest.

Dr. Nelson—You spoke of the chloride of lime; do you use it?

Dr. Northrop—Yes, we use it in Foot Rot.

Dr. Nelson—Would that not be a very uncertain preparation?

Dr. Northrop—We use it in disinfecting our pens. In our work we use the pens over and over again for different experiments. For instance, we will have a bunch of hog cholera in a pen and when done with those, we soak the pens thoroughly with a cheap disinfectant, remove the manure, then use a solution of chloride of lime, and we don't have any trouble from infection.

President Boor—Gentlemen, you have had a very pleasant evening with this paper with its illustrations; it is something new to most, if not all, of us, and I for one feel like thanking the doctor for this entertainment, and I believe the association as a whole should do the same. Moved and seconded and carried.

President Boor—Now we are all but through for this evening; has anyone anything for the good of the order, so to speak?

Dr. Roberts—At Chicago during the national convention last September, I remember that those of us Indianaians who were present thought it wise to ask the A. V. M. A. to meet at Indianapolis in 1910. After meditating some little while, wondering whether it was the proper thing to do, we sent them (the executive committee) an invitation to come to our city for their next annual meeting. We were turned down because the executive committee thought the western coast had been slighted with reference to meetings, and decided upon San Francisco for the next meeting. I would like to know what the members of the State Association think with reference to inviting the greatest of veterinary organizations to Indianapolis for their 1911 meeting? Do you think we can entertain them? Do you think with the assistance of the State Association that we could furnish clinics enough for that day? Do you think the association can finance the arrangements and also furnish entertainment for the ladies that will be present at the meeting? Have we nerve enough as well as money enough to take care of them if they come?

Enthusiastic responses were made, and it was finally put on motion and carried that the A. V. M. A. be invited here in 1911, and it be left to a committee to be appointed by the incoming president. Adjourned until 9 a. m. January 13.

Ind. Vet. College, January 13, 1910, 9 a. m.

#### CLINICS.

Clinic No. 1.—Black mare, aged, 15.3 hands, 1,050 pounds; owner had her in his possession 30 days; lame when he got her; goes about four or five blocks very good, then lameness appears in the left hind; gets worse and at the end of fifteen minutes she will go down. Drs. Fleming, Greiner and McMahon were asked to diagnose the case. Animal was led ten minutes; very lame in the left hind; violent heart action; pulse hardly perceptible; respiration violent with dyspnoea; pupils dilated, showing distress throughout. Diagnosis: Thrombosis of the left illiac artery.

Clinic No. 2.—Grey mare, aged, 16 hands, weight, 1,200 pounds; operated upon fourteen days previous; resection of the planter cushion and perforans tendon; wound showing healthy granulations; animal improving. Dr. Roberts.

Clinic No. 3.—Black mare, aged, 15.3 hands, weight, 1,100 pounds; ring bone; high neurectomy. Table, local anaesthetic, Eurea Hydrochlorate and Quinine 1 per cent. solution. Dr. W. B. Craig.

Clinic No. 4.—Black mare, aged, 15 hands, weight, 800 pounds; injured seven weeks previous, having the fourth sacral vertebra fractured. Micturition and defecation were suspended, the former re-establishing itself in six days, and the latter in ten days. The tail which had hung pendant was slightly raised today for the first time. The gait, which had been very "wabbly," was much improved. Dr. Bronson.

Clinic No. 5.—Boston bull bitch; growth in the vagina. Drs. Schwin and Armour were asked to diagnose. Diagnosis: Infectious Granulomata. The gentlemen later operated upon the animal, removing the growth. Anæsthetics used were H. M. C. and Codrenin locally.

Clinic No. 6.—Oophorectomy No. 20; bull bitch. Anæsthetic, H. M. C. Dr. Kelly.

Clinic No. 7.—Bay mare, black points, 7 years old and speedy. Drs. G. L. Clark, Buzzard and Jacobs were asked to locate the lameness. Diagnosis: bad conformation of the fetlock, curly hock, and small exostosis of the hock; the latter the cause of the lameness. Cunean tenotomy by Dr. Klotz and fired by Dr. Coover.

Clinic No. 8.—Black mare, aged, 16 hands, weight, 1,100 pounds; thin and viscous; calk wound with accompanying corinitis. Treatment: antiseptic wash, creosol 50 per cent. solution and dry dressing. Dr. Roberts.

Clinic No. 9.—Bay gelding, aged, rough, weight, 1,400 pounds; keratoma from calk wound. Resection of the coronary and removal by Dr. Sigler. Table, local anæsthetic, cocaine.

Clinic No. 10.—Grey gelding, 15.1 hands, weight, 800 pounds; driver. Fibroid tumor, result of a bruise of the coronary band; removal on the table by Dr. Fleming.

Clinic No. 11.—Mule, 17 hands, weight, 1,400 pounds; 7 years; seedy toe right front, to within one inch of the coronary band. Removal of the diseased portion by Dr. Fleming and Farrier Cole.

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#### INTERNATIONAL COMMISSION ON CONTROL OF TUBERCULOSIS AMONG DOMESTIC ANIMALS.

It seems desirable that the public should be given opportunity to know what this commission is doing inasmuch as the commission represents indirectly the Canadian and United States

governments, and involves live-stock sanitary control work of all of the individual states.

The last session, held at Detroit, was devoted largely to reports. There were present representatives of Canadian and American breeders, Canadian and United States Departments of Agriculture, American and Canadian veterinarians. The following reported: Committee on Education and Legislation, Committee on Location of Tuberculosis in Cattle, Committee on Dissemination of Tuberculosis, and the Committee on Disposition of Tuberculous Cattle. The Committee on Education and Legislation made a partial report presenting a critical study of experience of certain states in their efforts to deal with this problem. The purpose of this was to present full information for the commission concerning mistakes and failures, and comparative successes of communities that have undertaken serious work with tuberculosis.

The Committee on Location of Tuberculosis in Cattle presented their report under such headings as "Provision for Notification"; "Location by Tuberculin Test"; "Location of Infected Herds Through Meat Inspection Service"; "Most Important Sources of Animal Tuberculosis."

The Committee on Dissemination of Bovine Tuberculosis presented its study under such headings as "Introduction of Disease Into the Herd"; "Dissemination by Feeding to Calves"; "Dissemination by Contact at Shows"; "Dissemination by Placing Healthy Animals in Contaminated Stables"; "Dissemination by Transportation of Healthy Animals in Infected Cars"; "Dissemination by Pasture Exposure." The discussion on this report gave considerable attention to the problem of tracing back from the killing floor to the infected farm with a view to detecting the diseased herds and concentrating control work as much as possible on diseased herds.

The Committee on Disposition of Tubercular Cattle reported concerning the necessity of accepting tuberculin for diagnosis as a fundamental; the necessity of voluntary co-operation; and the superiority of voluntary co-operation to measures of compulsion. This committee considered the feasibility of the Bang and Oster-tag methods of dealing with tubercular herds under American conditions. It also made recommendations concerning the relation of indemnity to final disposition of carcass; the principle of carcass salvage; the obligatory disposal of all clinical cases;

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and a study of the conditions which should determine the disposition of reacting cattle.

A very considerable amount of discussion on this report was given to the question of remuneration for owners and particularly as to whether this should be regarded as a temporary or as a permanent provision in tuberculosis control work. A number of members held that it must necessarily be considered as a useful preliminary and temporary measure.

Careful consideration was given to the possibility of making either the Ostertag or Bang method of dealing with tuberculosis in the herd, or a combination of the two, feasible in America and Canada for grade herds. This is along the line of finding some method more economical than slaughter for as many herds as possible.

The next meeting of this international commission will be held in Ottawa.

M. H. REYNOLDS, Secretary.

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#### PORTLAND VETERINARY MEDICAL ASSOCIATION.

Minutes of a meeting held in the Medical Building for the purpose of organization of the veterinarians of the City of Portland on Tuesday evening, March 29, at 8 P. M.

The name selected was the Portland Veterinary Medical Association.

Election of Temporary Officers—Dr. J. T. Sullivan, president *pro tem.*; Dr. L. G. Stickney, secretary.

Remarks by President Sullivan, followed by submission of by-laws of American Veterinary Medical Association, and the following changes were suggested by members:

1. Change of article 6, section 2, in regard to two-year colleges. It was moved by Dr. Johnson, seconded by Dr. Smith, that we be governed by the recognized colleges of 1910.

2. Moved by Dr. Miller and seconded by Dr. Abbot that membership fees be five dollars and dues one dollar per month, with special assessment as seen fit by members.

3. A change in article 8, section 2, to change dues to monthly instead of semi-annually, as suggested in the American rules.

Meetings—To be held the fourth Tuesday in each month at

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8 P. M. Regular annual meeting the third Tuesday in September, 1910.

Adoption of By-Laws—Moved by Dr. Carney and seconded by Dr. Miller that we adopt the by-laws with the above changes. Carried by unanimous vote.

Election of Regular Officers—President: Nomination of Dr. Carney by Dr. Stickney, seconded by Dr. Sullivan, on being placed to vote, was elected unanimously.

Vice-President—Dr. Sullivan was elected by a unanimous vote.

Secretary—Dr. Sullivan nominated Dr. Hanson, who was elected.

Treasurer—Dr. E. W. Hagyard.

Executive Committee—Dr. Smith, Dr. Johnson, Dr. Miller. First member, Dr. Smith, to act as chairman of the committee.

Essayists of Next Meeting—Dr. Smith, Dr. Sullivan.

Adjournment 10 P. M.

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#### NEW YORK STATE VETERINARY MEDICAL SOCIETY.

Program for meeting of New York State Veterinary Medical Society, to be held at Ithaca, August 25, 26, 27, 1910 (tentative plan, May 12, 1910):

V. A. Moore, Ithaca—"Meat Inspection."

Hon. R. A. Pearson, Albany—"Milk Inspection."

Wm. J. McKinney, Brooklyn.

T. G. Sherwood, New York.

D. W. Cochran, New York.

J. Lynn Leonard, Spencer—"Therapeutics of the H-M-C Compound and the Value to the Veterinarian."

Wm. B. Switzer, Oswego—"A Mistaken Diagnosis."

D. D. LeFevre, Newark—"Experience with Barium Chloride."

Ben Howes, Corning—"Prophylaxis."

J. F. DeVine, Goshen—"Statistics of Tuberculin Tests and Post-Mortem Findings."

## LAWS GOVERNING VETERINARY PRACTICE.

TABLE INDICATING THE REQUIREMENTS OF STATE LAWS GOVERNING THE PRACTICE OF VETERINARY MEDICINE THROUGHOUT THE UNITED STATES, WITH NAMES AND ADDRESSES OF EXECUTIVE OFFICERS.

Secretaries are requested to promptly notify the REVIEW office of any changes in the law, regulations, personnel or addresses of the officers of their respective Boards.



STATE.	Preliminary Education.	Professional Training.	Licensing Tests.	Registry.	Executive Officer and Address.	Administrative Board.	Remarks.
Missouri.	No requirements.	No requirements.	Examination.	With the State Board.	D. F. Luckey, Sec., Columbia.	Veterinary Examining Board.	
Montana.	.....	.....	.....	.....	.....	.....	
Nebraska.	No requirements.	No requirements.	Examination.	With State Board.	A. T. Peters, Lincoln.	State Board of Vet. Examiners.	
Nevada.	.....	.....	.....	.....	.....	.....	
New Hampshire.	No requirements.	No requirements.	Exam. or grad. from a lawfully constituted school.	With the State Board.	R. I. Twombly, Secretary, Alton.	State Board of Veterinary Examiners.	
New Jersey.	21 years of age. Good moral character. Competent school education.	Grad. from legally incorp. school having at least three year course approved by Board.	Examination and practical tests.	With the State Board and with the Clerk of the Court of Common Pleas.	Wm. Herbert Lowe, President, Paterson.	State Board of Veterinary Medical Examiners.	Examinations held at State House, Trenton, Jan. and June.
New Mexico.	.....	.....	.....	.....	.....	.....	
New York.	Graduation from a four year secondary school subsequent to 8 years elementary preparation.	Graduation from a registered school.	Examination.	With the Clerk of the county of practice.	Chas. F. Wheelock, Chief of Examinations Division N. Y. State Education Department, Albany.	Examinations Division of New York State Education Department.	
North Carolina	No requirements.	No requirements.	Examination.	With Sec. State Bd. and Sup. Ct. of c'ty of residence.	G. A. Roberts, Secretary, West Raleigh.	Board of Veterinary Examiners.	
North Dakota.	No requirements.	Graduation from a legally authorized school.	Examination.	With Board annually.	S. P. Smith, Pres., Cando.	State Board of Veterinary Medical Examiners.	
Ohio.	No requirements.	No requirements.	Examination. Diploma from reputable school accepted in lieu of examination.	With the Secretary of the State Board.	David S. White, Columbus.	Board of Veterinary Examiners.	



## VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alumni Ass'n, N. Y.-A. V. C.....	Sept. 6, 7, 8, 9, 10	141 W. 54th St. San Francisco.	J. F. Carey, East Orange, N. J. R. P. Lyman, Kansas City, Mo. Horace E. Rice, Little Rock.
American V. M. Ass'n.....	1st and 3d Thur. of each month	Lec. Room, La- val Un'y, Mon- treal	J. P. A. Houde, Montreal.
Arkansas Veterinary Ass'n.....	2d Fri. ea. mo.	Chicago.....	H. A. Smith, Chicago, Ill.
Ass'n Médécale Veterinare Fran- çaise "Laval".....	.....	San Francisco.	J. J. Hogarty, Oakland.
B. A. I. Vet. In. A., Chicago.....	.....	Ottawa.....	A. E. James, Ottawa.
California State V. M. Ass'n.....	.....	Chicago.....	J. M. Parks, Chicago.
Central Canada V. Ass'n.....	.....	Denver.....	M. J. Woodliffe, Denver.
Chicago Veterinary Society.....	.....	.....	B. K. Dow, Willimantic.
Colorado State V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Connecticut V. M. Ass'n.....	.....	.....	P. F. Bahnsen, Americus.
Genesee Valley V. M. Ass'n.....	.....	.....	Louis P. Cook, Cincinnati.
Georgia State V. M. A.....	June 28, 1910.....	.....	I. H. Crawford, Harvard.
Hamilton Co. (Ohio) V. A.....	.....	.....	W. A. Swain, Mt. Pulaski.
Illinois State V. M. Ass'n.....	.....	.....	E. M. Bronson, Indianapolis.
Illinois V. M. and Surg. A.....	Jan. and Aug.....	.....	H. C. Simpson, Denison.
Indiana Veterinary Association.....	Jan. 11, 12, 1911.....	.....	B. Rogers, Manhattan.
Iowa Veterinary Ass'n.....	.....	.....	D. A. Piatt, Lexington.
Kansas State V. M. Ass'n.....	.....	.....	S. Lockett, Gleneden.
Kentucky V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Keystone V. M. Ass'n.....	Monthly.....	.....	C. L. Blakely, Augusta.
Louisiana State V. M. Ass'n.....	.....	.....	H. H. Counselman, Sec'y.
Maine Vet. Med. Ass'n.....	.....	.....	Wm. T. White, Newtonville.
Maryland State Vet. Society.....	.....	.....	Judson Black, Richmond.
Massachusetts Vet. Ass'n.....	.....	.....	G. Ed. Leech, Winona.
Michigan State V. M. Ass'n.....	.....	.....	J. C. Robert, Agricultural Col.
Minnesota State V. M. Ass'n.....	.....	.....	B. F. Kaupp, Fort Collins, Colo.
Mississippi State V. M. Ass'n.....	.....	.....	F. F. Brown, Kansas City.
Missouri Valley V. Ass'n.....	July 13, 14, 1910.....	.....	W. S. Swank, Miles City.
Missouri Vet. Med. Ass'n.....	July 1910.....	.....	H. Jensen, Weeping Water.
Montana State V. M. A.....	June 28, 29, 1910.....	.....	J. F. De Vine, Goshen.
Nebraska V. M. Ass'n.....	.....	.....	Adam Fisher, Charlotte.
New York S. V. M. Soc'y.....	Aug. 25, 26, 27, 1910.....	.....	C. H. Martin, Valley City.
North Carolina V. M. Ass'n.....	June 23, 1910.....	.....	.....
North Dakota V. M. Ass'n.....	Jan. 1911.....	.....	A. J. Kline, Wauseon.
North-Western Ohio V. M. A.....	Feb. and Nov. in each year.....	.....	O. V. Brumley, Columbus.
Ohio State V. M. Ass'n.....	Annually.....	.....	F. F. Sheets, Van Wert, Ohio.
Ohio Soc. of Comparative Med.....	.....	.....	R. A. Phillips, Oklahoma City
Oklahoma V. M. Ass'n.....	1st week in Aug. each year.....	.....	.....
Ontario Vet. Ass'n.....	Call of Chair.....	Paterson, N. J.....	C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n.....	.....	.....	H. K. Berry, Paterson, N. J.
Philippine V. M. A.....	4th Tues. ea. mo.	Portland, Ore.....	Chas. G. Thomson, Manila.
Portland Vet. Med. Ass'n.....	.....	Mon. and Que.....	Peter Hanson, Portland, Ore.
Province of Quebec V. M. A.....	Jan. and June.....	Providence .....	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	J. S. Pollard, Providence
St. Louis Soc. of Vet. Inspectors.	.....	Reading.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	.....	Philadelphia.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	.....	Sioux Falls.....	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.....	.....	.....	J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n.....	July, 1910.....	Los Angeles.....	.....
So. St. Joseph Ass'n of Vet. Insp.....	Jan. Apl. Jy. Oct. 4th Tues. ea. mo.	407 Ill. Ave.....	A. D. Hubbell, Los Angeles.
Tennessee Vet. Med. Ass'n.....	.....	.....	H. R. Collins, So. St. Joseph.
Texas V. M. Ass'n.....	Call Exec. Com.	St. P. Minneap.....	A. C. Topmiller, Murfreesboro
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	.....	R. P. Marsteller, College Sta.
Vermont Vet. Med. Ass'n.....	.....	.....	S. H. Ward, St. Paul, Minn.
Veterinary Ass'n of Alberta.....	.....	.....	G. T. Stevenson, Burlington.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo.	514-9th St., N. W.....	C. H. H. Sweetapple, For.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	Saskatchewan, Alta., Can.
Vet. Med. Ass'n of N. J.....	.....	.....	.....
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	M. Page Smith, Wash., D. C.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City .....	F. Torrance, Winnipeg.
Virginia State V. M. Ass'n.....	July 14, 1910.....	Norfolk.....	W. Herbert Lowe, Paterson.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve.	Pullman.....	W. Reid Blair, N. Y. City.
Washington State V. M. A.....	.....	Seattle.....	A. F. Mount, Jersey City.
Western Penn. V. M. Ass'n.....	.....	Pittsburgh.....	W. G. Chrisman, Charlo'sv'le.
Wisconsin Soc. Vet. Grad.	1st Wed. ea. mo.	Grand Rapids.	R. G. McAlister, Pullman.
York Co. (Pa.) V. M. A.....	.....	.....	J. T. Seely, Seattle.
			F. Weitzell, Allegheny.
			J. P. West, Madison.
			E. S. Bausticker, York, Pa.

## PUBLISHERS' DEPARTMENT.

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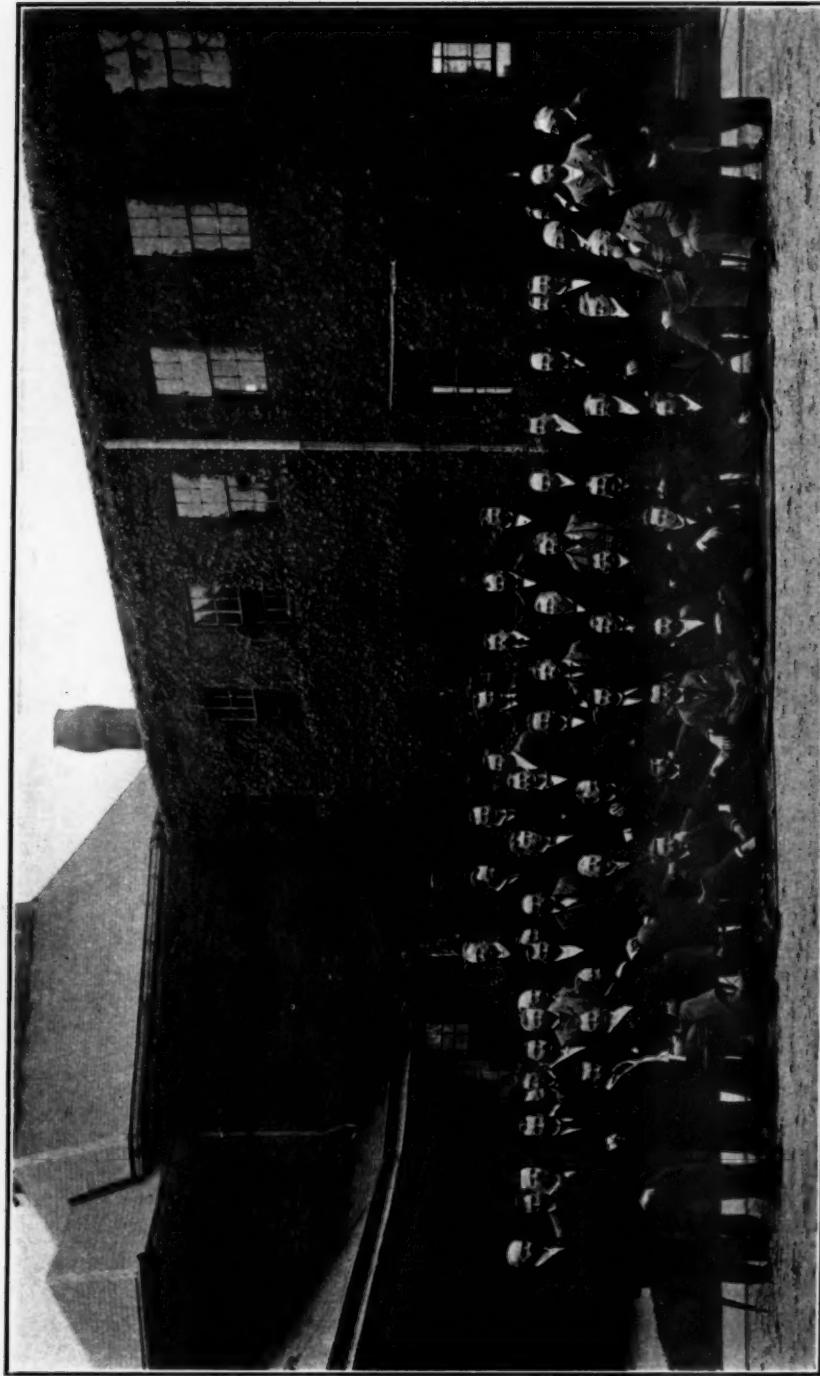
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